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THE DIAGNOSIS OF AMOEBIASIS

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Amoebiasis is one of the major problems confronting the Medical Services in the Far East. The incidence is surprisingly high, the diagnosis often difficult and elusive, the treatment unsatisfactory, and the relapse rate disappointing (Payne, 1945). In addition to those whose symptoms are sufficiently incapacitating to lead to admission to hospital, there are probably a greater number of individuals who, after infection, become cyst-passers, unaware of their condition and of their gradual deterioration in health and fitness. On final demobilization difficulties will arise in temperate climates not only among those returning from the East but among others who will be infected by them.

The disease is so protean in its manifestations that it is important not only to confirm the clinical diagnosis but, if possible, to eliminate the suspicion of amoebic infection in other conditions which may simulate amoebiasis. Moreover, the identification of cyst-passers is of the greatest assistance in preventing its spread. After four years' service in the East one cannot but arrive at the conclusion that the seriousness of amoebiasis has not been fully appreciated in the United Kingdom; nor have the majority of residents in the East been sufficiently alive to the risk of infection to which they may be constantly exposed. It is well known that over 90% of the indigenous population suffer from worm infestation, and the examination of 600 cooks, ward boys, and others handling food in establishments near this hospital showed that 12% were passers of the cysts of the *Entamoeba histolytica*. The danger of infection to which Europeans are exposed is thus considerable. It is possible in the majority of cases to be ignorant of the infection and, even if it be suspected, to experience but little interference with normal life. That health has been below normal is volunteered by all cyst-passers—even though they may have been entirely symptom-free—after the completion of treatment. The danger lies not so much in the more dramatic accidents of hepatitis, haemorrhage, or perforation as in the general lowering of health and efficiency.

It is suspected that amoebiasis is a much more common condition among Europeans than is generally realized, and that the failure to appreciate its incidence is due largely to the lack of symptoms distressing enough to cause the patient to seek advice, and partly to the tendency to arrive at a premature negative diagnosis on the results of too few investigations.

Material

These conclusions have been drawn from a series of 300 cases seen in Ceylon in which the *Entamoeba histolytica* has been identified in its vegetative or cystic form. During these investigations some 40.000 stool examinations have been made.

The incidence of amoebiasis in intestinal complaints is surprising, as it forms 46% of the total cases admitted to this hospital.

Cases Admitted with Bowel Disorders

	Per cent.
Enteritis	46
Bacillary dysentery:	
Proved	7
Clinical	1
Amoebiasis	46

Though the incidence may appear to be high, it can be explained in part by the fact that the majority of cases admitted to this hospital are referred from other establishments, and thus the acute cases of gastro-enteritis which normally recover within a week or so are not seen, the greater proportion consisting of ambulatory cases of old-standing diarrhoea and abdominal pain.

The number of examinations required to arrive at a diagnosis differs from case to case.

Number of Stools	Percentage of Cases Diagnosed
1	30
2	12
3	8
4	8
5	7
6	2
7	3
8	3
9	3
10	6
11	3
12	4
Over 12	11

Two large groups occur. One-half are diagnosed on the first 3 examinations, and half of the remainder after 8 or 12. The diagnosis of the few remaining usually requires between 16 and 20 examinations. The first group represents cases which show obvious blood and mucus with diarrhoea (25%), and three-quarters of the cyst-passers (25%); the second group those with vague abdominal symptoms, whose clinical relapses and admission to hospital are followed by an exacerbation of the pathological findings. If the examination of stools is limited to three specimens (Manson-Bahr, 1943) a considerable proportion will remain undiagnosed. Even 10 specimens (Svensson and Linders, 1938) cannot be considered to be adequate. Each case should be judged on its merits, though for routine purposes nine-tenths of those in which the *Entamoeba histolytica* may be found will be diagnosed if 12 specimens are examined. Caution similarly should be exercised in assessing the results of treatment.

Attacks of bacillary dysentery and acute enteritis have often brought to light an underlying amoebiasis. It is therefore of as much importance to be able to eliminate the possibility of an amoebic infection as it is to establish the diagnosis. In all cases complaining of diarrhoea, whether the exudate suggests an amoebic, a bacillary, or a mixed origin, examinations have been carried out throughout treatment and convalescence in order to eliminate latent amoebiasis and to determine whether any reliable diagnostic criteria could be established. It has been found that in cases of acute bacillary dysentery (Sonne and Flexner) which recover clinically the excretion of red blood cells and leucocytes does not persist for more than two weeks after the onset of the original attack. (An insufficient number of Shiga infections have been encountered to afford any conclusion.) No reliable characteristics have been found to differentiate macrophages from pre-cystic forms of the *Entamoeba histolytica* in unstained films. As the infection progresses, however, it becomes evident that cases fall into two groups: those which subsequently excrete less degenerate and later vegetative entamoebae and which, with their remission, pass pre-cystic forms; and those in which the pathological features disappear gradually, with the entire absence of cysts. It is on this last feature—the disappearance of the red cells,

leucocytes, and macrophages, and the non-appearance of cysts —that underlying amoebiasis may be eliminated.

It has been possible to follow for over a year the progress of some 30 patients, in addition to others exposed to exactly the same risk of infection. An opportunity has thus been provided to compare the findings over a long period with the subsequent clinical history. It is found that no contact whose stools do not contain red blood cells and leucocytes for 10 or 15 specimens shows further pathological features; nor do clinical symptoms develop. Those cases in whose stools red blood cells and leucocytes have appeared after having been absent, perhaps, on three or four examinations have been considered as potential hosts of the *Entamoeba histolytica*, for after purging or on more prolonged examination this infection becomes evident. Twenty-five cases with no clinical symptoms have been diagnosed in this manner.

Identification of the Entamoeba histolytica

The pathological diagnosis of intestinal amoebiasis may be considered from two aspects: (1) the recognition of the *Entamoeba histolytica* and its differentiation from other protozoa; (2) the measures which provide the best opportunity for its recognition.

Little need be added to the accepted features: for if the three criteria of size, the ingestion of red blood cells, and purposive movement with the explosive extrusion of pseudopodia are observed, the possibility of confusion with other intestinal protozoa is remote. Although it may be tempting to predict the subsequent development of one of these features which may be absent for the moment, it has been found in this series of cases that to hazard a diagnosis on sluggishly moving or immobile precystic forms is unnecessary; for sooner or later, usually in the three or four subsequent specimens, a definite diagnosis can be made.

Methods for Rendering Discovery Easier

The recognition of cysts has proved to be more difficult than is usually assumed, as the majority have ill-defined characteristics. In direct smears the recognition of chromatoid bodies is no easy matter, and in those stained by Weigert's haematoxylin after fixation in Schaudinn's fluid considerable care should be exercised in the elimination of artifacts. Organisms adhering to the surface of the cyst and plications of the wall from enfolding during fixation may closely resemble the internal structures. To overcome this difficulty a modification of Faust's method of concentrating cysts (Faust *et al.*, 1939) has been used, employing copper sulphate.

A piece of faeces about 4 cm. in diameter is macerated with distilled water in a urine glass and allowed to sediment and filter overnight through six layers of surgical gauze. The supernatant fluid is poured off and the faecal mud is mixed with a saturated solution of copper sulphate and centrifuged at high speed for ten minutes. Films are made from the upper surface.

The advantage of this method lies not so much in bringing to light cysts which would not have been seen in direct smears as in that the washed cysts can be seen clearly, for the only bodies which appear with them after concentration are helminth ova and occasional vegetable cells. No confusion of intracellular detail with artifacts can thus arise. The copper sulphate stains the majority of vegetable cells blue and precipitates protein matter. This method of concentration reveals cysts in twice the number discovered by the examination of direct films.

It has been accepted in the past that chance plays a large part in the diagnosis of intestinal amoebiasis. This, however, is not borne out by the findings in this series. The stools are passed and examined under optimum conditions, the bed-pan being dispatched immediately after use and the contents not transferred to a smaller receptacle. The blood and the mucus which may be adherent to the outer surface of the stool are thus retained in this position, and in those cases in which a pultaceous stool is excreted the mucus passed at the end of defaecation is easy to recognize. The delivery of a specimen in a second container, though possibly convenient to a ward, interferes with the easy selection of material for examination. It has been our practice to make four separate slides from each stool, in order to reduce the possibility of error due to random sampling. The appearance of pathological features can be hastened by a purgative. A saline cathartic is preferable, as oily laxatives leave droplets which obscure the microscopical field. It is important to avoid this measure in the quiescent stage before the undisturbed state of the colon has been ascertained, as it is sufficiently irritant to produce red blood cells and leucocytes.

Each case shows a regular evolution. There is a gradual change in a relapse from normal stools with a very occasional leucocyte to the appearance of red blood cells and leucocytes in greater profusion. Cysts then develop. Later mucus, with more leucocytes and pre-cystic forms, is found, with frank blood. This stage is followed by the appearance of vegetative forms, or the condition subsides in the reverse order after a variable interval. This tide is more or less symmetrical, and if, after the pre-cystic and immobile forms have been found, cysts begin to reappear, the vegetative forms are not to be expected, and a further exacerbation must be awaited or a diagnosis made on the identification of the cysts. This cycle is longer in duration and more gradual in its progress in cases associated with vague abdominal symptoms and is more precipitate in those with diarrhoea. Several volunteers whose course could be followed closely confirmed this conclusion. A graphic representation recording the features of consistency, the presence of macroscopic blood and mucus, and the finding of red blood cells, leucocytes, vegetative, pre-cystic, and cystic forms of the *Entamoeba histolytica* made this contrast between the acute and chronic cases evident. So far as is possible every stool has been examined, but in the acute cases those passed at night have been discarded. In the chronic cases, however, as cysts and not vegetative forms are to be expected, these stools are retained for examination the next day.

The regularity of this rhythm suggests that it represents the pathological activity of one lesion—or, alternatively, that the diseased colon undergoes its relapses and remissions as a whole —rather than the existence of separate lesions with uncorrelated cycles. This is confirmed by the general increase in activity accelerated by an attack of gastro-enteritis or by the use of a purgative.

There is a close correlation between the pathological findings and the site of the disease as assessed on clinical and radiological evidence. In rectal disease—when the chief complaints are diarrhoea, tenesmus, and the passage of frank blood and mucus—red blood cells, leucocytes, and vegetative pre-cystic forms are found, but cysts rarely appear. The vegetative forms, though perhaps immobile when examined at first, may become quite active after half an hour on a warm stage, even after the mucus has been previously immersed in broth at room temperature for the purpose of culture. This suggests that, though care should be taken to ensure that examination is made immediately after evacuation, the interval between the shedding of the amoeba from the ulcer and its discharge per anum is of importance. This factor may be reduced by encouraging the patient not to delay in defaecation or by purgation.

When the caecum and ascending colon are involved, with the production of vague pain and constitutional symptoms, there are no active forms; but cysts, leucocytes, and red blood cells are found more or less uniformly distributed throughout the faeces. Perhaps the reason for this is not so much the differing type of lesion as that in their passage down the colon the more active forms degenerate into cells which may not be recognizable as having been derived from protozoa. The "showering" of cysts does not seem to occur when four specimens are examined from each stool.

Adjuncts to Diagnosis

The value of sigmoidoscopy as an adjunct to diagnosis would seem to depend on the experience of the investigator. In the more obvious cases, in which pathological confirmation of an almost certain clinical diagnosis is required, the findings on sigmoidoscopy are usually definite. A preliminary stool examination to eliminate bacillary dysentery and perhaps to identify the *Entamoeba histolytica* might well be followed by sigmoidoscopy or proctoscopy for the easier collection of mucus. In the obscure cases, in which doubt arises in the pathological findings and in which the elimination of amoebiasis may be of importance, the lesions may be high up or minute. Furthermore, in this series of cases few of those presenting

caecal tumours had ulcers in the rectum or the pelvic colon. This experience is in contrast with that of Payne (1945). Sigmoidoscopy would appear to be of great value in effecting a diagnosis in the dysenteric case in the shortest time but to have limitations in latent cases.

Conclusions and Summary

The prevalent attitude to amoebiasis is concerned with the difficulties of treatment, the liability to infection being regarded as an unavoidable risk. As a feasible and practicable laboratory diagnosis can be made, it is felt that attention should be directed to the prevention of its spread by the removal of cyst-passers from the handling of food, the diagnosis of latent cases in permanent residents in the Tropics, and the elimination of unsuspected infection among members of the Services on repatriation.

The pathological findings of 300 cases of amoebiasis in which the *Entamoeba histolytica* has been identified are described. The difficulties of laboratory diagnosis are discussed. Routine examinations, to reduce the incidence of the disease, are suggested.

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ACROPARAESTHESIA IN THE LOWER LIMBS

UNEXPLAINED PAINS IN THE LEGS AT NIGHT

BY

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For simplicity I have used the word "pains" in the subtitle of this note, but the sensation which is experienced in the cases I refer to is not actually pain but a peculiar tingling discomfort which, when intense, becomes painful. I believe the sensation is the same as in the condition called acroparaesthesia, which commonly occurs in the arms at night and is of far more frequent incidence in women than in men. Among the early descriptions of it were those of Putnam in 1880 and of Ormerod in 1883, and, following the lead of the former, it is still usual to regard it as a vasomotor neurosis; but Behrman (1945) in his recent paper regarded it as due to slight pressure on the brachial plexus at the thoracic inlet, and, while insisting that it was not necessarily nocturnal, attributed its frequent occurrence at night to the influence of the recumbent posture and the hypotonia of sleep in bringing about such pressure. Walshe (1945) has taken a similar view. Acroparaesthesia in the lower limbs has been mentioned by some of those who have written on the subject, but in recent times its occurrence seems to have been insufficiently recognized. All the sufferers from it whom I have encountered have been in men, but one patient said that his mother had suffered from "pains" in the legs which he thought were similar to his own.

The following cases provide good examples of this condition.

Case I

An architect aged 68 complained that he had pains in his legs at night, which he had been subject to for more than forty years. They had gradually grown worse as he got older, and now they kept him awake a great deal. The pains used to come on after he had gone to sleep and wakened him up, but recently they had occurred about half an hour after he had got into bed. Formerly he used to move his legs to a cooler part of the bed or put them out from under the blankets, but in recent times these measures have been insufficient, and he has had to get out of bed and walk about the room for a little. He may have to do this several times in one night. If he gets out of bed in this way while the pain is present he may feel "groggy about the ankles," and in the mornings he sometimes feels similarly "groggy." When he came to see me he said he was getting practically no sleep till three or four o'clock in the morning.

The sensation in his legs began as a tingling in the calves, and gradually, as it became worse, it became more like pain. He called it "neuritis." The discomfort was always below the knees. In answer to my inquiry he said he had some burning sensation in his feet, but evidently this was not an important feature in his condition. The "pains" were limited to the night, except that very occasionally in winter, when sitting in front of the fire, he had felt some tingling in his calves. Even when he had to stay in bed because of illness the pains were limited to the night, and they had been very troublesome when he had pneumonia, and also after he had had his prostate removed nine or ten years ago. He did not think that his position in bed made any difference to the occurrence of the pains. As an architect he was in the habit of standing all day at his work, but he did not believe that exercise during the day had any influence on the nocturnal pains, because the latter had occurred as usual when he was kept in bed by illness. He was inclined to think that mental strain had more effect in aggravating them than physical exercise. He said he was not a rheumatic person and had no pains elsewhere.

The patient was a thin man of medium height and generally of light build. I found no abnormal physical signs in any part of his nervous system or elsewhere in his body. In particular the knee-jerks and ankle-jerks were normal and the plantar reflexes "flexor." He had no loss of appreciation of light touch, pain, temperature, position of his toes, or vibration. The muscles of his legs were all of normal size and were not tender. He walked normally, and Romberg's sign was negative. His blood pressure was 140/90 mm. Hg and his arteries felt normal for his age. There was good pulsation in the dorsalis pedis artery in each foot, and his toes showed no cyanosis or pallor. He had no varicose veins. His heart was normal. His spine seemed normal and he stood in a normal posture. There were no signs of arthritis in his knees or hip-joints, or elsewhere. In his abdomen I found no abnormality. His Wassermann reaction had previously been done, and was negative.

He had had various kinds of physiotherapy to his legs and different types of antirheumatic treatment without any benefit resulting. He had also been treated with vitamins B_1 and B_2 over a long period, and had been given phenobarbitone at bedtime to make him sleep.

I advised that he should cease standing at his work and prescribed a combination of aspirin 10 gr. (0.65 g.) with phenobarbitone 1 gr. (65 mg.) to be taken at bedtime, and these measures brought about a dramatic improvement. After ten days he gave up the phenobarbitone, and he has continued to have restful nights.

Case II

A doctor of my acquaintance, now aged about 50, has suffered from paraesthesiae and pains in his legs at night off and on for about fifteen years. If mild the sensation is an uncomfortable tingling, but if severe it is painful and is associated with some tenderness in his calves. At first the discomfort occurred only after playing tennis, and in recent years it has usually been associated with other forms of physical exercise such as gardening or driving his car long distances. He has long intervals of freedom from his symptoms, and at other times the pain or discomfort may be troublesome every night for weeks. It has gradually become more frequent; its intensity is very variable; but during the war, when he was working very hard and driving about a great deal, there was a period during which it was worse than he had ever experienced before. The discomfort wakens him up about half an hour after he has gone to sleep, and it may awaken him two or three times in a night. If it is not severe he merely puts his legs in a cooler part of the bed, but ordinarily he puts them out from under the bedclothes, and sometimes he lies on his face and holds his feet up in the air and moves them at the ankles so as to exercise his calf muscles. In recent times he has had a mild burning sensation in his feet associated with the "pains," but this burning sensation also occurs independently of them. So far as he has been able to determine, the posture in which he sleeps does not make any difference to the incidence or severity of the symptoms, which occur every night for a time and then remit for weeks or months. He has not observed any influence of psychological factors on the pains, and has been through periods of mental stress without suffering from them. In contrast to the previous patient, he was free from these pains during a period of illness. He never has any active discomfort in the daytime, but when the pains are troublesome he says that he can feel a little tingling in his calves during the day "if he thinks about it," and there may even be a little deep tenderness in his calves.

His ankle-jerks and knee-jerks are quite normal. There has been no wasting of his calf muscles or other musculature, and no loss of sensation or change in the appearance of the skin. The arteries of his feet seem normal and there is no indication of impaired circulation, but when the burning sensation is present some redness is seen along the outer borders of his feet and outer parts of the soles. He has no varicose veins.

He is a tall thin man. Though generally healthy he is somewhat rheumatic, has had nodules on his fingers since his student days, and is liable to occasional pains in his shoulders and hip-joints. His blood pressure is normal. When the pains are troublesome this patient takes 10 gr. of aspirin at bedtime, with invariable relief.

Case III

In another patient whom I saw recently paraesthesiae affected all four limbs; they were not related to exercise and they occurred during the day as well as during the night. He was a butler, aged 57, and had been liable to these abnormal sensations for three years at least. They occurred when he got warm, and affected his hands and forearms and his feet and calves. They were worse if he sat long in one position, unless he was in the cold. During the day he relieved them by avoiding warmth so far as he could and by muscular movements. During the night he "kept looking for a cold spot" for his feet in the bed, or put his feet out from under the bedclothes, and in the summer he was accustomed to lie on top of the bedclothes.

Except that he had some varicose veins I found no abnormal physical signs. His pulse was not abolished at either wrist by putting his shoulders back and taking a deep breath. He had had prolonged treatment with vitamin B without effect on his symptoms.

Other Cases

During the war, while acting as neurologist to the Eastern Command (Home Forces), I saw several cases of this kind in soldiers. I recall two instances in officers, whose symptoms began while they were serving in the Army. They were both men in the middle forties, whose military duties had required them to undergo more strenuous physical exercise than they had been accustomed to in civil life. Both of them attributed the occurrence of the pains to marching, and one said quite definitely that if he did no marching he had no pains. Both had been greatly relieved during periods of sick leave. One had been treated with applications of radiant heat to the legs during the day, but it seemed to me probable that rest was the more important factor in bringing about the improvement. Both of these patients were of stouter build than either of those in the first two cases, and one would undoubtedly be classified as stout. I do not recall details in regard to their liability to rheumatic symptoms or whether they had any varicose veins.

Comments

I do not propose to discuss the differential diagnosis of this condition, which is in general not difficult. It is obvious that it is necessary to make sure that there are no signs of any organic disease of the nervous or vascular system and to exclude pains due to arthritis and sciatica.

The tingling is usually described as being in the muscles, and is relieved by muscular activity, but the burning sensation in the feet, if present, is superficial and is relieved by putting the foot against something cold. Ekhom (1945a, 1945b) considers that there are two varieties—pain and paraesthesia. My own experience does not bear this out. Paraesthesia if sufficiently intense may become painful, and the same subject may suffer at one time from tingling and at another from a painful sensation.

These paraesthesiae or "pains" occurring in the legs at night raise several interesting questions: Are they of the same nature as the acroparaesthesia which is frequent in the upper limbs? Have they an organic cause? What, if any, is the influence of physical exercise in bringing them about, and, if it does, by what mechanism is this delayed effect of exercise produced? Why do they occur during sleep?

There can be little doubt that the sensation is the same as that of acroparaesthesia in the upper limbs, and, in fact, I see no reason why these cases should not be included under the heading of acroparaesthesia, which is one applicable to all the extremities. Schultz (1893), who first used the word "acroparaesthesia," intended it to have this wider application. Not only is the quality of the sensation the same, but both in the upper and in the lower limbs the sensation occurs above all in sleep; if at all severe it awakens the sufferer, and it is relieved by the same means—viz., putting the affected parts out into the cold, holding them up, and exercising them. Furthermore, in very many cases the apparent effect of physical exercise taken during the day in bringing about this peculiar discomfort at night is similar in both instances. Sleep and physical exercise are the most constant associates of acroparaesthesia in the upper limbs, as they are of these paraesthesiae in the lower. Rheumatic conditions (arthritis, fibrositis, Heberden's nodes) are also frequently associated (Parkes Weber, 1945), and similar conditions have been present in some of these cases of "pains" in the lower limbs. Behrman (1945) has stressed the association of the former with pregnancy, but I have not yet observed this association with the discomfort in the legs.

All the cases of acroparaesthesia in the lower limbs that I have seen so far have been in men, and yet acroparaesthesia in general is much more common in women. This contrast can hardly be due to differences of habits and varieties of work between the two sexes. It may conceivably be accounted for by differences of posture and structure in the body, but, if so, no adequate explanation on this basis has yet been put forward. Both Behrman (1945) and Walshe (1945) have attributed the discomfort in the upper limbs in women to a minimal degree of pressure on the structures at the thoracic inlet, but in the cases referred to here I have been unable to discover any mechanical factor to which the paraesthesiae in the lower limbs could be attributed. Posture in bed seems to make little difference, and I have not observed any constant peculiarities of bodily configuration in the individuals concerned. I understand that this variety of discomfort was not uncommon among the officers of our Army in the Middle East, and there was a tendency there to attribute it to sleeping on hard beds. The intermittent character of the symptoms in patients who sleep constantly under the same conditions seems to render a constantly present mechanical cause unlikely, and when paraesthesiae occur in all four limbs it is particularly difficult to suggest any physical mechanism that would account for them.

Similar paraesthesiae in the legs have been one of the most frequent features of the early stages of organic nervous diseases due to dietary deficiencies among prisoners of war, and they occur also in subacute combined degeneration of the spinal cord, polyneuritis, and other organic nervous diseases. Paraesthesiae are also a feature of some cases of vascular occlusion, and they occur in cases of "immersion feet" where there is a combined nervous and vascular effect. But even after forty years of paraesthesiae at night my patient in Case I showed no sign of organic nervous or vascular disease that I could discover, nor have there been such signs in any of my other patients. There is consequently little justification for supposing that in these cases the symptoms represent a minimal degree of some serious organic disease.

The association of these paraesthesiae with exercise seems in many instances to be fairly close; but if they depend in any way upon exercise, why do they occur after such a long interval, and what is the influence of sleep in precipitating their onset? To these questions I am unable to offer any satisfactory answers. With muscular stiffness and other occasional delayed effects of exercise, such as cramps, they do not seem to have any connexion.

The association with sleep is equally puzzling. Acroparaesthesia is one of those conditions which are brought on by sleep and yet terminate sleep or interrupt it. Its dependence on sleep in so many cases seems to be due more to an association with warmth and vasodilatation than with the recumbent posture; but none of these influences is ordinarily effective in the absence of sleep, though in Case III warmth was an adequate exciting cause whether the patient was asleep or awake. It is possible that immobility during sleep is also an important factor. If at all severe the paraesthesiae waken the sufferer, but if mild they may not do so, and he only becomes conscious of them on waking at about the usual time in the morning.

I have found aspirin (10 gr. (0.65 g.) given at night and/or in the early morning) most serviceable for relieving these paraesthesiae. This is peculiar, because aspirin itself causes vasodilatation and a sensation of warmth and by making him sleep more soundly may increase the patient's immobility; but even if the practice is "homoeopathic" it is justified by the results.

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THE PROBLEMS OF DIPHTHERIA*

BY

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Diphtheria is of venerable antiquity, but its history really begins with its delineation in 1855 by Bretonneau and Trousseau, who incidentally had previously introduced tracheotomy for laryngeal diphtheria. In 1883 Klebs identified and Loeffler confirmed the causal role of the diphtheria bacillus, and five years later Roux and Yersin demonstrated the exotoxin, which Von Behring used in 1890 to produce an antitoxic serum from guinea-pigs. In 1894 the excellent results with Roux's horse antitoxin in the treatment of diphtheria in Paris brought about the adoption of serotherapy in London, where the customary dosage of 2,000 to 4,000 units of antitoxin subcutaneously produced a fall in the case mortality of diphtheria from 23% in 1894 to roughly 8% in 1905. The principle of passive immunization through a small dose of antitoxic serum was soon established.

Attempts at the active immunization of human beings by injections of toxin finally led to the use of a mixture of toxin and antitoxin for this purpose by Von Behring in 1913, in which year Schick published his famous skin test with diluted toxin. We now know that the presumably susceptible positive reactor has a blood antitoxin content below 0.01 unit per ml., and that antitoxin concentration is above this in the negative reactor.

Some Recent Advances

The use of toxin for prophylaxis has been associated with various disasters, but it has seldom been so used in Britain, where it was shown that injections of toxoid (i.e., toxin altered by interaction with formalin) could confer immunity without toxic effects, although with the risk of local reaction in the sensitive. Further improvements led to our present safe use of alum-precipitated toxoid for children and toxoid-antitoxin floccules for adults.

Although isolated cases of hypertoxic or malignant faucial diphtheria were not unknown, it was reported from Germany in 1927 (Deicher and Agulnik) that an epidemic of severe diphtheria had arisen, that many cases resisted antitoxin treatment, and that there was a suspicion that the antitoxin had failed. Three years later unusually virulent diphtheria in Hull and Leeds was studied by McLeod and his colleagues (1933), who were able to distinguish in 505 clinical cases three distinct strains of diphtheria bacilli, differing in cultural properties. One of these, associated with severer cases attended by high mortality (13%) and a high incidence of complications (albuminuria 52%, paralysis 20.5%), was named the "gravis" strain, and was actually found in 380 of the cases studied. Another strain, found in 102 milder cases of the disease, none of which were fatal, was named the "mitis" strain. Yet another strain, found in 23 cases almost as severe as the first group, had cultural characters midway between the two types named and was therefore called the "intermedius" strain. It now seems that these are fixed strains and that bacteria having the gravis or intermedius characters are nearly always virulent, while some mitis strains are quite harmless. All virulent strains, however, owe this quality to an identical exotoxin, and most bacteriologists agree that virulent diphtheria bacilli do not lose this property nor do avirulent organisms acquire it.

Originally, diphtheria antitoxin was simply the pooled sera of immunized horses with a concentration of about 500 units per ml. It caused serum reactions in about 40% of patients. In 1925 "concentrated diphtheria antitoxin" was produced, by the removal of useless protein with ammonium sulphate, in strengths of 2,000 units per ml., with a reduction of reactions to 20%. Further digestion of serum protein with enzymes made possible the "refined diphtheria antitoxin" that is used to-day with about 1% of reactions. All along, the standard toxin used in horses to produce antitoxin has been from the Park Williams No. 8 strain, now classified as of intermedius type.

The experiences quoted have thrown some doubt on the sufficiency of this strain to evoke an antitoxin suitable for gravis infections and caused some hesitation as to the wisdom of these improvements.

Diphtheria Mortality and Epidemiology

In spite of the fact that in diphtheria the lesion is easily visible, in spite of the unusually accurate and speedy laboratory aid to diagnosis, and in spite of specific antitoxin, an appalling mortality has continued throughout this century, and only three years ago were some signs of improvement observed. As late as 1940 there were 2,466 deaths from diphtheria in England and Wales (Registrar-General's *Stat. Rev.*, 1940). Of small account in infantile mortality, the disease caused one-twelfth of the deaths in pre-school children and one-seventh of the deaths in school-children. Until recently this mortality was to be explained only by the lack of timely treatment with antitoxin, and the most common reasons cited for this were the failure of parents to invoke medical aid and of practitioners to suspect the disease and administer antitoxin. Neither reason is fully apposite, as we shall presently see.

The official immunization effort began in 1941 and has been well worth while, but in 1944 there were 23,152 cases and 934 deaths. In that year case mortality was 8.4% in pre-school children and 4.7% in younger school-children.

Notification and isolation of diphtheria have been followed for many years, but the disease has scarcely altered in incidence. Contact and chronic carriers, immune to the toxin, act as the reservoir of infection, and surveys of the community always show a small percentage of individuals carrying virulent organisms in the throat or nose. When domestic contacts of the disease are swabbed for the organisms the percentage found to harbour diphtheria bacilli is considerable. Over 10 years, in my own area, 11% and 4% have been the extremes.

The modern view of diphtheria, therefore, is a picture of an epidemic of undetected carriers proceeding simultaneously with the incidence of clinical cases. Using the Schick test on the population at large, it can be shown that positive Schick reactors diminish from nearly 100% at one year to 10–20% at the end of school life, and the same has been found true in closed communities. This Schick conversion was actually observed by Dudley *et al.* (1934) in the new entrants to Greenwich Hospital School during a period of diphtheria prevalence, and it is explained as the result of minimal infections with resultant absorption of minute doses of toxin. Diphtheria patients are the susceptible individuals in whom doses of virulent diphtheria bacilli have obtained a foothold.

Spread of diphtheria infection, so as to cause the disease or the carrier state, must be directly by droplet "spray" or contact and indirectly by infected articles, such as feeding utensils, or occasionally milk. Nowadays no one accepts the statistical theories which at one time incriminated defects of drainage or low annual rainfall, nor is there any reason to connect the disease with local accumulations of filth. Infection by diphtheria bacilli in a really immune subject is productive of no clinical result, save at the worst the carrier state. In a susceptible person such an implantation nearly always causes a local lesion, of which the appearance and pathological sequels will vary according to the invasiveness of the organisms and their toxigenicity, as modified by the site of invasion and the resistance of the individual and his tissues to the bacilli and to the toxin.

The bacilli appear to favour, in order of preference, the fauces, larynx, nose, genitals, wounds, and eye as sites for entry; but the toxin would appear to be most readily absorbed from the nasopharynx, pharynx, and tonsils, in that order, very little absorption taking place from the skin or anterior nares. The affected area develops a layer of fibrinous exudate called "false membrane," on and below which the bacilli multiply. The larger the area of false membrane the more toxin is elaborated. Some other morbid process—e.g., enlarged tonsils and adenoids—may predispose to actual infection, and long after the toxic phase has been combated may allow the bacilli to thrive locally.

The toxin causes local necrosis and oedema and degenerative changes in the tissues, especially the heart muscle, kidney, liver, suprarenals, medulla, and peripheral nerves. The natural

* An abridged version of an address to the North of England Branch of the British Medical Association, at the Royal Victoria Infirmary, Newcastle, Oct. 18, 1945.

constitutional reaction to toxin in non-lethal doses is the formation of antitoxin and its circulation in the blood, but this is a very slow process in the susceptible person. If there is some basic antitoxin—i.e., if an antitoxin-producing mechanism already exists—the rate of production of antitoxin will be found accelerated, and this ability to mobilize antitoxin is the best defence against clinical sequels to infection. Natural antitoxic immunity has been shown to increase with age, but it can be set up and stimulated by injections of toxoid, which is the rationale of the immunization process, of the success of which the usual criterion is the conversion of a Schick-positive reaction to a negative.

Carriers are normally Schick-negative, which means that they are protected by natural antitoxin. Convalescent patients have considerable quantities of horse and natural antitoxin in the blood, yet they continue to carry the organisms for varying periods. These facts argue the existence of antibacterial as well as antitoxic immunity.

Clinical Forms of Diphtheria

Faucial diphtheria may be subdivided into tonsillar, pharyngeal, and nasopharyngeal varieties, and it has been usual to describe the disease as beginning on the tonsils and spreading to the palate, uvula, pharyngeal wall, and nasopharynx on succeeding days. Thus a mild tonsillar diphtheria used to be considered a first- or second-day lesion, while nasopharyngeal diphtheria was commonly believed to be of late development and usually accompanied by marked fetor oris, swelling, and distortion of the fauces, with glandular enlargement at the angle of the jaw.

In 1936 severe diphtheria started in Gateshead, its first victim being a general practitioner. It is still prevalent, and many hypertoxic clinical cases have been encountered. I would describe a typical case as follows:

> On the first day there is the gradual appearance of some exudate on the tonsil, with translucent oedema of the pillars of the fauces and the palate (an appearance like quinsy but for the absence of three of the classic signs of inflammation). On the second day oedema is more extreme and there is a continuous thin gelatinous film with an advancing edge. At this stage there arises oedema of the associated neck glands, spreading to the periglandular tissues. With treatment the spread of membrane will be arrested—not at once, but in one to three days—and it will show a definite edge and thickening so as to resemble the icing on a cake. Later still it may peel off in one large piece or, as the oedema gradually subsides, shrivel and disintegrate, but the lesion continues to manifest exudate for some days. These changes have often been observed to occur after the administration of antitoxin in doses of 80,000 to 100,000 units intravenously or intramuscularly as early as the second day, and have even been followed by a fatal issue despite this.

In the beginning, gravis infections accounted for half of the Gateshead cases, but since 1941 they have been associated with 80%. I must make it clear that many gravis infections were clinically mild, but also that the severe cases were associated with gravis organisms.

The special features of gravis diphtheria I would summarize as follows: (*a*) invasiveness and toxicity of the bacteria; (*b*) resistance to early antitoxin treatment; (*c*) tendency to produce clinical diphtheria in subjects ordinarily considered to be immune—i.e., inoculated persons, Schick-negative reactors, and persons who have already survived an attack of diphtheria; (*d*) rare association with laryngeal disease: in Gateshead we have had no tracheotomies in the last three years in 900 cases, while in the earlier years they numbered 1% of cases.

The fatalities of faucial diphtheria are mainly to be found in the severe nasopharyngeal varieties, in which, in addition to faucial membrane, nasal discharge or obstruction and a gagging of the voice occur.

A variety of nasopharyngeal diphtheria, fortunately uncommon, may follow the unusual invasion of the nasopharynx, giving rise to an early nasal obstruction and a later spread of membrane downwards and forwards to the pharynx and tonsils, so as to produce the anomaly of early membrane on the tonsil with marked fetor and toxaemia of several days. Of great importance in faucial diphtheria are the comparative painlessness and relative mildness of early symptoms, best described as degrees of malaise. We should therefore never omit the examination of the throat in an ailing child.

The recognized teaching in suspected faucial diphtheria used to be the immediate administration of a safeguarding dose of 2,000 units of antitoxin and the taking of a swab for bacteriological diagnosis. Even with a warning as to the not infrequent failure of swab diagnosis, this teaching is simply not good enough. The proper procedure is to reserve the expectant attitude for the doubtful tonsillar condition. If the membrane and exudate extend to the soft palate or uvula, if there is any painless swelling of tonsils or fauces or neck glands, if there is fetor, if there is nasal or laryngeal involvement, the case should be sent immediately into hospital as clinical diphtheria, with or without a large dose of antitoxin according to the speed of transport facilities.

In diphtheria of the larynx, occurring primarily or as a secondary spread from faucial disease, strangulation is threatened from the beginning. The earliest sign is the typical cough, succeeded shortly by the suppression of the voice to a whisper and the appearance of inspiratory and expiratory stridor. Every case presenting these three signs should be in hospital and have the benefit of a therapeutic dose of antitoxin while the bacteriology is being explored. A certain number of suspected "croups" will turn out to be non-diphtheritic, and these cases should forthwith be immunized.

Anterior nasal diphtheria is so mild that it is usually found in the examination of contacts. It is to be suspected in excoriations of either or both nostrils with a serous or mucopurulent discharge from the nose, within which membrane may be visible. So common are diphtheroids in the nose that bacteriological diagnosis must always be confirmed by a virulence test. Vulvovaginal diphtheria has, in my experience, coexisted with faucial or nasal infection or disease, and is characterized by membrane on the labia or within the vagina. A feature of both anterior nasal and vulvo-vaginal diphtheria is the appearance on the skin surrounding the lesion of septic spots, which after serotherapy will be found to retrogress in keeping with the main lesion. Other forms of diphtheria—conjunctival, which threatens vision, cutaneous, and wound—are rare in this country, and their diagnosis necessitates a confirmatory virulence test. Mixed types of diphtheria may coexist in the same patient, and the outlook then depends entirely on the degree of faucial involvement or of laryngeal obstruction, for these are the varieties attended by fatality.

Serious Complications of Diphtheria

The threat to life in faucial diphtheria is limited to the severer forms with abundance of membrane. Thus in 200 cases of nasopharyngeal disease in Gateshead in 1941–4 there were 56 deaths, compared with 884 cases of tonsillar diphtheria with 2 deaths from the disease. Another high fatality rate encountered was 4 deaths among 16 mixed faucial and laryngeal cases.

Death in diphtheria most commonly takes the form of a cardiotoxic syndrome peculiar to the disease. With patients who have not had specific treatment, and may even have been ambulatory, death may be sudden, as was the case in five children found dead at home in Gateshead during the last nine years. More commonly, in hospital, with the patient under treatment by absolute rest in the "head down" position and receiving every nursing attention, the syndrome is of gradual development and may be delayed as long as two weeks. A typical sequence of events is that the toxic patient develops some albuminuria, some tachycardia, accompanied by a softness of the pulse and a waxy appearance of the skin or slight cyanosis. He vomits, and the pulse—sometimes fast, sometimes slow—will show an easily perceived irregularity of rhythm and force. Vomiting is repeated whenever anything is given by the mouth, and there develops thirst with restlessness and mental dulling. The urine becomes scanty and often shows the presence of blood, while there may be widespread skin haemorrhages as in one-fifth of our fatal Gateshead cases. Once vomiting is repeated death is inevitable, and there is no treatment known to me that will save life, although the final issue may be delayed for as long as a week. Other cardiac disturbances, such as extrasystoles and bradycardia, may also be encountered, but in these cases the prognosis is good with rest, so long as the patient does not vomit. The danger of death in laryngeal diphtheria is from asphyxia, and this danger is not entirely removed by tracheotomy, because of the formation of membrane below the incision and the risk of pneumonia.

Although the acute stage may be safely surmounted it is still possible for paralysis to occur, varying in incidence and extent, directly with the severity of the acute stage, from a mere muffling of the voice in the mild cases to the development in the more severe of complete paralysis of the pharyngeal and palatal muscles and a resultant nasal regurgitation of fluids, inability to swallow, and accumulation of mucus. The paralysis may progress to affect the laryngeal muscles, the diaphragm, and the muscles of the limbs. Very often the muscles of the eye are involved, and sometimes, indeed, paralysis of accommodation may be the only symptom. In these cases knee-jerks are usually absent. Theories as to causation favour an ascending neuritis from the lesion to the medullary nuclei with a central degeneration of grey matter spreading therefrom upwards and downwards.

Danger to life in paralytic cases chiefly arises from a second form of heart failure, which may be sudden but is due to myocarditis and associated degenerative nervous lesions. Gross irregularities of the heart are usual, but there may be no vomiting.

In diphtheria one cannot forecast paralysis in any case nor take steps to combat it. Many patients may emerge through the early toxic stage of severe nasopharyngeal disease to make a rapid and perfect recovery, while other cases of moderate severity, well dosed with antitoxin, may show fairly severe paralysis. Nevertheless, the more severe the disease and the younger the patient the more frequent the paralysis, which is most common at about four weeks, but may be as late as the sixth week. It is not uncommon for patients who have undergone hospital treatment for mild diphtheria to be presented shortly after discharge to the family doctor with muffled speech or difficulty in swallowing, and occasionally these are the first intimation that the patient has survived an attack of the disease. For paralysis, only rest, nursing, and vis medicatrix naturae are of avail, but a little strychnine may help.

Treatment

The specific treatment of diphtheria remains, as in the days of Roux, the injection of horse antitoxin or its active fraction. With the use of refined diphtheria antitoxin the danger of fatal anaphylaxis may be dismissed entirely, providing the routine practice is followed of injecting 0.1 ml. of antitoxin subcutaneously and waiting twenty minutes. In the asthmatic or hay-fever subject a skin-sensitivity test with the same dose should be substituted. In the absence of any reaction it is fairly safe to administer antitoxin either intravenously or intramuscularly, but adrenaline should be instantly available. Dosage of therapeutic antitoxin continues to be controversial, but it has been established that 1,000 units will confer passive immunity for a period of ten days. In treatment, the small doses of the pioneers by the subcutaneous route were beginning to be replaced just before the last war by doses of up to 30,000 units intramuscularly in severe and late cases, yet such an authority as Ker (Banks, 1934) held that the administration of antitoxin in excess of 6,000 units was wasted. In 1928 Goodall had arrived at a similar conclusion about antitoxin in excess of 30,000 units. In 1922 Von Bie advocated a dosage of over 200,000 units in late cases, and in 1928 Banks was advocating doses of this order intravenously.

What is the purpose of antitoxin in treatment? Goodall (1928) answered that the object was primarily to neutralize toxin already formed or in process of formation, and, secondly, to prevent extension of false membrane. By such a rule, adequacy of dosage could be checked against the local lesion by inspection.

Previous to 1930 the administration of the accepted scheme of dosage, which varied from 16,000 units for the tonsillar case to 30,000 units for the nasopharyngeal, did usually stop the further extension of false membrane; but in severe cases associated with gravis organisms the tendency of membrane to spread after curative antitoxin is marked, as are the fatality of the disease and the high incidence of complications.

With the advent of this type of diphtheria the objectives of antitoxin treatment must be restated. To neutralize all toxin already in circulation or being produced at the lesion requires only a comparatively small dose of antitoxin. Ehrlich's original calculation led him to suggest a dosage of about 2,000 units for this purpose. Certain it is that the injection of 10,000 units will ultimately produce in the average child an antitoxin concentration of somewhere about 1 unit per ml. of blood, which is well above the Schick level. We must now view the further objective of antitoxin therapy as the attempt to dissociate toxin already in loose combination with the tissues by providing an excess of antitoxin, and to determine the adequate dosage one must meantime rely on clinical opinion, the consensus of which is that doses of 60,000 units or upwards are required for hypertoxic diphtheria of the kind described. My personal preference in such cases is for a minimum dosage of 80,000 to 100,000 units, but I must say that I am still not satisfied with the therapeutic effects. It is worthy of note that an "avid" antitoxic serum—that is, one of unusual combining power—has given satisfaction to McSweeney (1941).

Where gravis diphtheria prevails I would advise the minimum dosage of antitoxin for the suspected tonsillar case to be 10,000 units, 20,000 to 40,000 units for the proved tonsillar or pharyngeal lesion, and 80,000 units as a minimum where there is oedema of the fauces, a spreading membrane, or nasal or glandular involvement. In laryngeal diphtheria, so rarely associated with gravis organisms, 20,000 to 40,000 units should be enough; and in all other forms—e.g., nasal diphtheria—10,000 units should be ample.

The theory of mixed infection has been responsible for alternative or additional methods of specific treatment for diphtheria, but I have used and abandoned streptococcal antitoxin, *Cl. welchii* antitoxin, and the sulphonamides. Diphtheria bacilli are sensitive to penicillin, and at present we limit its use to severe cases. Its role in treatment would seem to be as an adjuvant, for it arrests the formation of membrane and hastens its disintegration, but it does not abort the toxic changes.

Diphtheria Prophylaxis

The absence or presence of gravis diphtheria explains the diverse experiences of diphtheria prophylaxis. In North-East England comparative incidence rates show a reduction to one-half or one-third only, as a result of full inoculation. There is nevertheless an agreement that mortality is rare in the fully inoculated, and in England and Wales deaths from diphtheria have dropped each year, from 2,641 in 1941 to 934 in 1944. Our Gateshead comparison has been 7 fully inoculated cases to every 10 uninoculated in 1943 and to every 15 in 1944.

What are these cases of diphtheria in the inoculated like? As set out in the accompanying Table, which compares three categories, the mitigation of the disease as a result of inoculation is striking, and the only additional note that is called for is that tonsillar disease in the inoculated may give rise to difficulty of diagnosis due to a frequent resemblance to follicular tonsillitis, as pointed out by Neubauer (1943).

Clinical Classification of Diphtheria in Gateshead, 1941–4

	Not Immunized	Fully Inoculated	Partly Inoculated
Anterior nasal	14	—	1
Tonsillar	613 (3 deaths*)	201	70
Pharyngeal	130 (2 deaths)	28	15
Nasopharyngeal	171 (52 deaths)	16 (1 death)	13 (3 deaths)
Primary laryngeal ..	11	—	1
Faucial and other lesions	26 (4 deaths)	—	1
Total	965 (61 deaths)	245 (1 death)	101 (3 deaths)
Haemorrhagic cases ..	11	—	—
Albuminuria	164 (17%)	16 (6·5%)	7 (7%)
Paralysis	90 (10%)	4 (1·6%)	7 (7%)

* One of these was due to tuberculous meningitis supervening in convalescence.

Should these cases of diphtheria in the fully inoculated be given antitoxin? I would answer "Yes," but usually a dose of about 10,000 units. Occasionally we have found that the information as to previous inoculation has not been verified, and therefore clinical rules for treatment should always be followed. Diphtheria in Schick-negative reactors is mild, as it is also in the form of a second attack, of which some 26 cases have been encountered in Gateshead.

We shall apparently not control the incidence of diphtheria by inoculation of toxoid if gravis strains of diphtheria bacilli are prevalent, although we should eliminate mortality. If this is so, will gravis diphtheria oust all other strains as a result of

immunization? This one cannot answer finally, but it is an eventuality to be feared, with its great risk for the young uninoculated child.

Comparing methods of prophylaxis, the present dosage of 0.2 ml. and 0.5 ml. of A.P.T. emerges as the best procedure, followed closely by the use of three 1-ml. doses of T.A.F. The smaller doses of 0.1 ml. and 0.3 ml., and latterly 0.1 ml. and 0.5 ml., of A.P.T. seem somewhat inadequate, and the fatal fully inoculated Gateshead case actually received 0.1 ml. and 0.3 ml. of A.P.T. It is possible to establish active immunity by injection of toxoid while the subject is protected with the passive immunity of a small dose of antitoxin.

The duration of immunity apparently depends on the factor of individual variation, which can never be accurately assessed. Nevertheless once antitoxin has been established it may easily be stimulated anew, and the practical application of this is the recommendation to administer 0.5 ml. of A.P.T. to the previously immunized entrant school-child. As mortality from diphtheria really begins in the third year of life, prophylaxis should always be sought in the second year of life, preferably at the beginning.

Contacts and Carriers

Contact carriers present a problem of disposal. In Gateshead we have been content to exclude them from school and work and keep them under observation. Most are carriers for very short periods, but occasionally one encounters the more chronic type. For these individuals hospital treatment is a waste of beds. In some areas swabbing of contacts has been abandoned and the emphasis placed on prophylaxis, but there is one justification for the routine swabbing of contacts in the discovery of a number of early cases of the disease. It is difficult to keep people under observation for the carrier condition without doing something for them, and some local antiseptic treatment has been adopted, such as throat paints in tonsillar cases and nasal insufflations. Lately the Kromayer lamp has been used to irradiate tonsils. In the chronic carrier it is always wise to assess the organisms for virulence before proceeding to surgical measures, such as tonsillectomy, and it looks also as if penicillin should be tried when it becomes available.

Does immunization increase the carrier percentage? The answer is "No," although the immunized person tends to become a carrier if the bacilli gain a lodgment in his tissues.

Conclusion

It must be obvious that we have not yet succeeded in our warfare against diphtheria, although we have made remarkable progress. Our future attack must be along two lines. We have to make our immunization against diphtheria more effective, either by exploring and stimulating the antibacterial defences of the tissues or by perfecting the means of evoking full antitoxic immunity in the body. Our second line demands a more intimate knowledge of the tissue combination with diphtheria toxin, especially in relation to the heart muscle and the nervous system. It also demands a reassessment of the role of the specific antitoxin in relation to this interaction of tissue and toxin. Such an inquiry must keep in view possible differences between the natural disease in humans and that induced in laboratory animals.

With a fuller understanding of the problem than we now possess it may be possible to improve our serotherapy so as to abort the cardiotoxic and paralytic syndromes and perhaps even to treat them along specific lines. The fact that diphtheria very seldom leaves any permanent disability in those who survive, no matter how ill the patient, shows that the tissue damage inflicted by the diphtheria toxin is not necessarily final and irremediable.

The solution of our present difficulties must come from clinicians, pathologists, serologists, and bacteriologists working in the close liaison of the team.

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PREFRONTAL LEUCOTOMY IN TREATMENT OF POST-ENCEPHALITIC CONDUCT DISORDER

BY

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There can be few more difficult or tragic cases of juvenile delinquency than those conduct disorders arising from the ravages of epidemic encephalitis, and, although it is 20 years since the last major epidemic, many of the more severe cases continue to spend years of turbulent isolation in our mental hospitals, defying all attempts at re-education. The mental sequelae of encephalitis seem to have transformed these patients into veritable "little devils" with *apache* propensities characterized by uncontrollable and vicious impulses uninfluenced by ordinary disciplinary measures, and their abnormal conduct ranges from excessive naughtiness to gross criminal acts.

In a study of a group of 144 severe cases Gibbs (1930) found that, over a period of eight years of special training, only 8 cases could be discharged recovered, and he considered that the outcome for the majority of the remainder was very gloomy. He concluded that the fundamental cause of much of their abnormal behaviour was an emotional dysfunction, a state of tension or irritability of affect, driving them to periodic outbursts of impulsive conduct of characteristic simplicity, unpremeditated and unplanned. Such a state of affairs would appear to afford the clearest indication for prefrontal leucotomy, which has alleviated many emotional psychotic states by the surgical division of the fibre connexions between the thalamus and the prefrontal area of the brain, thereby reducing the emotional tension. In the words of Freeman and Watts (1944), "Once the emotional nucleus has been successfully abolished, the sting drawn, the reconstruction of the personality can be attempted."

The present paper records two adult cases of post-encephalitic Parkinsonism in which severe behaviour disturbances present from childhood have been removed by prefrontal leucotomy, leaving immature but socially acceptable personalities.

Case I

This patient, a man aged 28, had an insomnic type of encephalitis in 1924, when 7 years old. Previously a normal healthy boy, he became restless and hyperactive, turning somersaults, whistling, noisy at night, and disturbing the neighbours. After a period of 26 weeks in hospital he returned home with little change in his conduct, and he became a constant source of trouble to his parents during the next seven years. He was mischievous and impulsively violent, and he would suddenly hit out without warning. He stole from shops and school, and was on probation for two years. School attendance was spasmodic, and at 14 he started work but was too erratic to continue. Nothing could be done with him, and in 1931 he was certified and sent into the mental hospital.

For the next thirteen years his conduct was similar to that at home. He was irritable, impulsive, and violent, stating that he couldn't stop himself. If he happened to be near a window he would suddenly put his fist through it. He once pushed his head through a window. On another occasion he threw a knife at a patient. He would become angry at the least provocation.

A slight degree of Parkinsonism was apparent on admission, and has shown little change during the years in hospital. He has the typical facies and gait, and a slight degree of generalized rigidity, but is very active and otherwise healthy. His intelligence grading was dull and backward, with a mental age of 8 or 9 years on the progressive matrices test. He was the firstborn of four children in a working-class family, and no factor other than the encephalitis could account for his change of conduct.

Operation.—Bilateral prefrontal leucotomy was performed by Mr. J. Hardman, neurosurgeon, Sheffield Infirmary and Hospital, in January, 1944. Under local analgesia after omnopon and scopolamine, a burr-hole was placed 3 cm. behind the orbital margin and 6 cm. above the zygoma. A brain needle was introduced and carried through an arc upwards and downwards to section the subcortical fibres in the plane of the coronal suture just anterior to the tip of the lateral ventricle (McKissock, 1943).

The patient was quiet throughout the operation, and afterwards remained in a dull and stuporous state for two weeks, lying in bed with his eyes closed but easily roused for feeding and attention. He was incontinent of urine. During the next three months he made

rapid progress, and soon regained his former alertness. He is now cheerful and contented, eager to co-operate in the rehabilitation programme. Incontinence gradually lessened, but it has never disappeared entirely. His impulsive and violent conduct has been entirely abolished, and during the two years following the operation he has not once attacked anyone or broken a window. He is now of equable and cheerful temperament, and appreciates that he can sit by a window without fear of pushing his fist through it (only the scars on his hands serve to remind him of his former misdeeds). He has been on leave many times, and returns to hospital without protest. His parents report that, although he no longer has violent outbursts, he is impetuous and not easily diverted from a course of action. He is selfish, and is indifferent to conventional good manners. He is careless in his attire, and will no doubt require a much longer period of habit-training before he can take a place in the home environment.

He is handicapped by an intellectual as well as an educational defect due to retardation by the encephalitic process in childhood. A recent psychometric report by Mr. E. V. G. Bradford gives him a mental age of 11 years, scored as follows: Shipley vocabulary, 12; Shipley abstraction test, 10; problems, 11; mechanical reading (Burt), 13; verbal repetition, 10; Kohs' blocks, 10; cube construction, 10. This shows a fairly even performance on a variety of tests, but there was a noticeable lack of sustained attention, and he was too easily satisfied with the results. Nevertheless, it is doubtful if he could have done as well before the operation, although his interest in reading has fallen off considerably since.

His Parkinsonism has remained unchanged, but he has had three epileptic attacks since the operation, and it is noted in the case records that a fit occurred in 1932. This suggests that he has an epileptoid disposition which has been activated by the operation. Unfortunately, electro-encephalography was not available.

Case II

This patient, a woman aged 31, had an attack of encephalitis lethargica in 1924 at the age of 10. The main feature of this attack was sleepiness during the daytime, and she remained in hospital for four weeks. The parents state that on the day of her return home she began fighting with other children, which was unusual for her, as she was formerly of even temper. From then onwards she developed temper tantrums, screaming attacks, and destructive impulses. She smashed windows and broke crockery, and her parents were continually embarrassed by complaints from neighbours regarding her assaultive tendencies. She said the other girls tormented her. She told lies, but did not steal or show any sexual tendencies. School attendance was intermittent, and from 14 years onwards she remained at home until 21, when she became unmanageable, and was admitted to the mental hospital under certificate in 1936. She was the elder of two children, and no social-environmental factors could be found likely to influence the development of her conduct disorder.

In the first eight years of her stay in hospital she had frequent emotional outbursts often lasting a week or more. She was then violent, aggressive, and destructive. Quiet periods became less frequent, and she was always irritable, excusing herself by saying that other people got her "ratty." She would not concentrate on intelligence tests, and her score on the progressive matrices, sets A, B, and C, was only 15. Slight Parkinsonism was shown by the facial expression and the posture of the fingers of the left hand with occasional slight tremor. The pupils were irregular and failed to react to light. There was no noticeable muscular rigidity. This degree of Parkinsonism has not progressed much since admission. Menstruation was normal, but did not start until the age of 18. Electric convulsion therapy was attempted in 1944 with little effect, and she refused to complete a course of treatment.

Operation.—Bilateral prefrontal leucotomy was carried out by Mr. J. Hardman in November, 1944, using the same technique as before, under local analgesia. She was a trifle apprehensive and emotional during the operation, but afterwards was noticeably calm and placid. On return to the ward there was little disturbance of consciousness, her attitude being one of watchfulness and expectancy. There was no incontinence of urine, and in a week she was up and about, somewhat irritable at first; but after a month she settled down calmly to the hospital routine, showing none of her former angry outbursts.

During the past 14 months she has remained in an even temper, willing and co-operative in simple daily tasks, contented, and apparently quite satisfied with life. Whereas before the operation she was never stable for long enough to permit even a day's leave from hospital, she has now been home on many occasions, and returns quite willingly. Her mother reports that when at home she is somewhat impetuous and self-willed, keen to have her own way, and seems unable to concentrate for any length of time. She will, however, read a book for long periods.

A psychometric examination by Mr. Bradford resulted in a mental age of 12 years, scored on the various tests as follows: Shipley vocabulary, 14; Shipley abstraction test, 10; problems, 10; mechanical reading (Burt), 13; verbal repetition, 12; Kohs' blocks, 13; cube construction, 11. As with the first case, the patient showed undue hastiness and a lack of sustained attention. Her score on the progressive matrices had increased from 15 to 20.

Comment

There can be no doubt that both patients have benefited by the operation, and enough time has now elapsed to justify an optimistic view of the stability of the results. Both are contented and happy; they had willingly consented to the operation, realizing that it was an attempt to help them to control their temper and violent outbursts. They have both made satisfactory adjustments within the sheltered life of the hospital, yet enjoy frequent visits to their families. Their parents are grateful, and the work of the nursing staff in regard to their supervision is now a pleasure. They are still irresponsible, however, as judged by normal social standards, but this is only to be expected, since leucotomy cannot give them personality attainments they never possessed. They have never been responsible citizens, and their personalities were still undeveloped when they were stricken with epidemic encephalitis. Although not mentally defective, they are below the average in intelligence and education, and it is doubtful if they will ever achieve full responsibility. Their capacity to learn may always be limited, but after 20 years of gross maladaptation we are satisfied with a reasonable degree of mental stability and a possible chance of continued development of their personalities.

It is recognized that the best results from leucotomy are to be obtained in individuals who have had well-integrated personalities. These subjects are often able to resume their former occupations, and ordinary tests of intelligence have, in uncomplicated cases, failed to reveal any special defect which could be attributed to the operation. This is borne out by our two patients, who show no appreciable degree of intellectual deterioration on the tests given, and their present social defects are more likely to be due to the virus than to the surgeon.

Ten years have elapsed since Moniz (1936) conceived of brain surgery for the relief of abnormal mental states, and considerable success has been achieved in the alleviation of many distressing symptoms in otherwise incurable psychotic states; much evidence has accumulated to suggest that the essential part of the operation consists in the interruption of fibre connexions between the hypothalamus, the thalamus, and the orbital areas of the prefrontal lobes, which, in effect, brings about a diminution in the emotional tension or irritability responsible for these symptoms. In this respect it is of interest to recall that William James (1901) maintained that the best proof of his theory of the emotions (that the immediate cause of the emotion is the physical effect on the nerves) lay in those pathological cases, found in every asylum, in which objectless emotion leads to unmotivated fear, anger, melancholy, or conceit. He might have welcomed leucotomy in support of his theory, for it may well be that, by the surgical interruption of affective-conative pathways, autonomic reactions are so modified that coarser emotions like anger and fear lose much of their intensity. Evidence of this is suggested by the finding of Reitman (1945) that the leucotomized patient shows a diminished response to autonomic stimuli.

Prefrontal leucotomy has already proved beneficial in the epileptic conduct disorders (Ström-Olsen *et al.*, 1943), and it is well known that emotional irritability is a characteristic feature of most of the psychopathic behaviour symptomatic of organic brain disease. It is questionable, however, whether the operation would be of equal benefit in the aggressive constitutional psychopath, since the morbid disposition in these cases is due to an innate or developmental imbalance of instinctive trends. Emotional tension is unusual, and many cases respond to psychotherapy and re-education.

Summary

Bilateral prefrontal leucotomy has been performed on two cases of post-encephalitic conduct disorder of 20 years' duration and present since childhood.

Complete alleviation of the aggressive and impulsive trends was produced in both cases, and has been well maintained over a period of two years and fourteen months respectively.

I am indebted to Sir Arthur Hall for much encouragement and advice.

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PENICILLIN IN GONORRHOEA

THE SINGLE-INJECTION METHOD

BY

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One of my main problems in the treatment of venereal disease in the Port of the Clyde was to cure, or at least render non-infectious, merchant seamen as speedily as possible. Many of those men by necessity of war conditions were able to attend only on one visit or two at most. Continuation of treatment was therefore very problematical. Some men were permitted to stay ashore the requisite length of time, but most seamen were reluctant to take advantage of this. It therefore became necessary to find a rapid method of curing men with gonorrhoea, or rendering them non-infectious, and with this in view a routine treatment of one single intramuscular injection of 200,000 units of penicillin was given. Very acute infections received 300,000 units. Concurrent urethral irrigations were also given if the seaman could attend; if not, their use on board ship was advised.

The supply of penicillin for this purpose was made available to me only in the last few months of the war, and in only 30 cases has enough time elapsed after treatment for a reasoned opinion to be formed of the efficacy of the method. Nevertheless I venture to put forward this small series for two reasons. (1) With the hope that, in some clinic dealing with larger numbers and where patients can be under more continuous supervision, the single-injection method will be tried out on enough cases to provide accurate statistics. (2) The present method of estimating the potent concentration of penicillin in the blood is too coarse—at least, so far as the gonococcus is concerned. The quantity of penicillin required to inhibit growth on artificial media can only roughly approximate to that required to inhibit growth *in vivo*.

Most of the early work on the penicillin treatment of gonorrhoea has been done by American workers. Uniformly good results are claimed in new and old cases, failed sulphonamide cases, and in articular gonococcal infections. All writers stress the importance of maintaining an adequate level of penicillin in the blood. Schemes for repeated injections vary in detail but are identical in principle—intramuscular or intravenous injections repeated at intervals of two or three hours. This undoubtedly maintains a definitely demonstrable level of penicillin in the blood. The same result can, of course, be reached by continuous intramuscular or intravenous drip, but this is hardly justified in gonorrhoea, for which out-patient treatment is a major consideration.

The Literature Reviewed

References to the use of penicillin in gonorrhoea are already voluminous, especially in American literature, but I here refer mainly to recent British medical literature.

McLachlan (1945) recommends 150,000 Oxford units administered in 5 doses of 30,000 units three-hourly, and reports it curative in "nearly all" cases; the gonococci disappear in two to four hours, and the discharge rapidly becomes mucoid and is often absent after 12 to 24 hours. Any cases failing to respond clear up with 100,000 or 150,000 units on the following day.

Harrison (1945) says penicillin is now the first line of attack in gonorrhoeal infections. He recommends 5 doses of 30,000 units two-hourly. Lloyd Jones and Maitland (1945) believe that the serum concentration must be such that a serum dilution of one in eight gives "serum inhibition," and recommend 5 doses of 30,000 units two-hourly. Lloyd Jones, Maitland, and Allen (*Lancet*, 1945), in a masterly report on penicillin for early syphilis, give very interesting figures of penicillin levels in blood and urine. After a single intravenous dose of 300,000 units, penicillin is demonstrable in the blood for 6 to 7 hours after and in the urine up to 17 hours. Given intramuscularly, the same dose is detectable in the blood 7 to 11½ hours after and in the urine 17 to 23 hours.

Recently an element of doubt has been creeping in as to the absolute necessity for this maintenance of demonstrable serum levels. Lloyd Jones and Maitland observe that penicillin must be present in the blood for more than eight hours, though the amount is presumably too minute to be detected by our present laboratory methods.

Suchet (1945) quotes American observers who have shown that blood penicillin levels undetectable by bacteriological examination can still be clinically efficient. Dyar, Schoitz, and Hammond (1945) conclude that a total dose of 50,000 to 70,000 units given in 5 doses yields a cure rate of 83% and 100,000 units give 91%.

Discussion

It may now be reasonably assumed that first choice of medicament in the treatment of gonorrhoea should be penicillin. It is also reasonable to assume that a patient suffering from gonorrhoea would prefer to be an out-patient than abed. That at once excludes the use of penicillin by continuous-drip methods. To continue the argument to its logical conclusion, the patient would prefer to attend as an out-patient once daily instead of two- or three-hourly for the injections. If this method can be proved to be equally efficient the medical profession also would undoubtedly prefer it. It would effect a great saving in time and trouble, and probably encourage patients to attend much earlier and more readily.

The cure of gonorrhoea by a single injection has been claimed by the American workers Romansky, Murphy, and Rittman, who use penicillin suspended in a beeswax–peanut-oil mixture; the rationale is that absorption is delayed, with consequently a more prolonged effect. Experiment showed this to be the case. The preparation of the beeswax–peanut-oil mixture is a troublesome procedure, but the results are good, and the method appears to offer the most promising line of study. Purely from a medical point of view, the overwhelming advantage of being able to cure gonorrhoea with one injection is obvious. From the social aspect its great advantages are rapid and complete cure with no prolonged and frequent clinic attendances to interfere with work or to invite publicity. No local ill effects from the injection of the beeswax–peanut-oil mixture are demonstrable clinically; histologically, in rabbits and hamsters minimum residual findings after several months were the only signs.

Urethral Irrigation

All writers are agreed that penicillin will cure gonorrhoea without concurrent urethral irrigation, and I can confirm this. Penicillin will readily lead to the death of the gonococcus, but it will probably have no direct effect on the inflamed mucosa. It is logical, in my view, to remove any products of inflammation by urethral irrigation with any bland fluid; saline would do, but time-honoured potassium permanganate is even better. It is quite conceivable that stricture would be much more prone to develop in a urethra which had not been mechanically cleansed of the products of inflammation.

The Single-injection Method Described

In this series the duration of symptoms before penicillin treatment was instituted varied from one day to six weeks. Ten of the cases had received sulphapyridine or sulphathiazole, but had failed to respond. On admission all the cases were clinically acute, with a copious purulent urethral discharge. In every instance the diagnosis was confirmed by microscopical examination. No cultures were made; and may I forestall any criticism on this point by saying that the number of non-gonococcal cases of urethritis whose smear shows Gram-negative diplococci morphologically indistinguishable from the gonococcus is very small indeed. Muir and Ritchie (1932) say the diagnosis on microscopical grounds alone is "practically conclusive."

The preparation used was sodium penicillin in powder form dissolved in 5 ml. of pyrogen-free sterile water, but ordinary

sterile boiled or distilled water was found to be equally effective as a vehicle. The injection was made intramuscularly into the buttock. All cases showed a rapid (2–12 hours, average 8 hours) change from a purulent to a mucoid discharge, and after 24 to 48 hours no discharge of any kind was present. Six hours after the injection gonococci were absent from the discharge in all but one case; this man was negative the next day. Some writers describe a transient increase in discharge followed by a steady diminution, but my experience has been a steady lessening from the time of the injection.

The return to normal was maintained and no case showed recurrence. The average duration of attendance was 33 days, and the average number of smears (after prostatic massage) was five; all were negative microscopically, and clinically the patients remained well.

Toxic Effects

I have observed no toxic effects whatever, but several writers mention pain or discomfort of varying severity at the site of injection. This undoubtedly varies with the brand of penicillin and with the technique of injection; some preparations of penicillin seem to be much more prone to cause discomfort than others. Other reactions which are described are: venous thrombosis (I always use the intramuscular route, and this problem does not arise); an urticarial attack after the injection in a patient with an asthmatic history, but no reaction from a different brand of penicillin; an alarming collapse after 500,000 units intravenously in another; and occasionally pyrexia, headache, shivering, and nausea.

Disadvantages

The single-injection method has several demerits: (1) The danger of producing a penicillin-fast strain of the gonococcus; all the cases described were apparently cured, but this possibility must be borne in mind. (2) The defaulter rate is much higher than with sulphonamide treatment, and it is hoped that the use of concurrent urethral irrigation will encourage men to continue with clinic attendance. (3) The very real danger of masking an early syphilis: the necessity for regular serological tests for the following twelve months must be strongly impressed on the patient.

Conclusions

The single-injection method of 200,000 units of sodium penicillin injected intramuscularly promises a rapid, simple, and trouble-free method of curing gonorrhoea; its effectiveness can only be decided upon after its use in a large number of cases under continuous supervision.

It follows that, to kill the gonococcus, *(a)* a demonstrable amount of penicillin in the blood need not be maintained for as long a time as has hitherto been believed, or *(b)* that level is needlessly high.

My thanks are due to Dr. Alexander Johnstone, medical officer of health, Greenock, for permission to publish this paper, and to the Department of Health for Scotland for making available to me a supply of penicillin.

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The Servers of the Blind League started its work after the war of 1914–18 with social clubs for the blind in different parts of the country and a Braille correspondence circle. Since then it has increased its activities with the Ellen Terry National Homes for Blind Defective Children at Reigate, a home for the aged blind at Arreton House, Woking, and the Robert Spurrier Home at Ascot. This organization is now appealing for funds for a nursing home (to be opened this year) with wards for bed-ridden blind patients and a special wing for private patients, and for a new home for the aged blind. For the latter the League has in view a house in Sussex, which has the accommodation necessary to provide single and double bed-sitting rooms, as it is felt that "a room of one's own" is the desire of all old people, even the blind. This new home will also cater for blind people with limited incomes. Donations should be sent to the organizing secretary, Servers of the Blind League, 28, Manchester Street, London, W.1.

Medical Memoranda

Ulceration of a Foreign Body through the Small Intestine

The following is the report of an interesting cause of the "acute abdomen."

Case Report

A married woman aged 62 was seen in the casualty department of Harrow Hospital on Aug. 31, 1945. She complained of severe lower abdominal pain for the past five hours, and also attacks of a similar nature, but lasting for only half an hour, on several occasions during the previous four days. There was no history of any gastro-intestinal upset or renal symptoms. Examination showed that she was a healthy but very obese woman; temperature 97.8°; pulse 64; B.P. 150/80. The tongue was clean, but there were dullness to percussion, tenderness, and guarding over the whole of the lower abdomen. Pelvic examination was rendered inconclusive by the marked obesity. However, a provisional diagnosis of a twisted ovarian cyst was made, and the patient was admitted to the hospital for laparotomy.

The abdomen was opened through a midline subumbilical incision. The pelvic organs were examined and found to be normal. It was noted that the whole of the small intestine was slightly injected, this reaction being most pronounced in the terminal 15 in. (38 cm.) of the ileum. The whole of the small intestine was carefully examined and a thin piece of wood 2 in. (5 cm.) long, shaped like a tooth of a comb, was seen to be ulcerating through the mesenteric border of the ileum 8 in. (20 cm.) from the ileo-caecal junction. Both ends of the foreign body were lying in the peritoneal cavity, the middle section being embedded in the wall of the ileum. Surrounding the "perforation" was an area of fibrinous peritonitis. The foreign body was removed by simple traction and the raw area overstitched with peritoneum. Five grammes of sulphanilamide powder was put into the peritoneal cavity and the abdomen closed in layers.

Post-operative convalescence was entirely uneventful, and the patient was discharged eighteen days later.

Discussion

This case is reported with the object of emphasizing the very real importance of making a careful examination of the entire gut during the course of an exploratory laparotomy. It may be added that, even after most careful questioning, the patient could at no time recall having swallowed anything in the nature of the foreign body which had been recovered from the abdomen.

I wish to thank Mr. D. K. Mulvany and the chairman of the medical staff fo permission to publish this case.

K. E. E. Read, M.B., B.Chir.,
Senior House-Surgeon, Harrow Hospital.

Myiasis in the Auditory Meatus of a Newborn Infant

Although myiasis of the external auditory meatus has been reported as being not uncommon in the Tropics I can find no record of its occurrence in West Africa, and the following case appears to present features of sufficient rarity to warrant publication.

A 3-para Hausa woman, aged 26 years, was delivered of the first infant of a twin pregnancy at 4.30 a.m. on Dec. 27, 1945, in "far bush." Thirty hours later she was safely delivered of the second twin in this hospital following internal version for a transverse lie. This second twin, on the fourth day of its life, was noticed to have a little fresh dried blood in its left auditory meatus. The following day the child appeared somewhat drowsy, and examination of its ear revealed a "worm" deep in the meatus. This was extracted without undue difficulty or damage to the worm, and was identified by Dr. Reid of the Research Laboratory, Accra, as the fully developed larva of the larviparous fly genus *Sarcophaga*—species uncertain but possibly *haemorrhoidalis* or *fusicauda*.

It was evident from its development that the larva had been deposited on the day the child was born and probably within a few minutes of its birth. The child had been delivered in a mosquito-proof theatre and had at once been taken to a mosquito-proof nursery. Larviposition must have occurred on the short journey along an open verandah from the theatre to the nursery.

Stitt (*Tropical Diseases*, 5th ed.) writes: "A very common finding in the Tropics is that of fly larvae in the external auditory meatus *where there is otitis media* . . . many cases have been due to *Sarcophaga*"—that is, Stitt reports its occurrence where there has been otorrhoea. Its occurrence in a normal ear, as in this case, is believed to be very rare. The infant has suffered no permanent damage.

I am indebted to the D.M.S., Gold Coast, for permission to record this case.

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Korle Bu, Accra.

P. C. Cosgrove, M.B., M.R.C.P.I.,
Medical Officer, Colonial Medical Service.

Reviews

ANAESTHESIA FOR THYROID OPERATIONS

Anaesthesia in Operations for Goitre. By Stanley Rowbotham, M.D., D.A. (Pp. 104; illustrated. 12s. 6d.) Oxford: Blackwell Scientific Publications.

This is a monograph devoted to only one of the many problems the solution of which the anaesthetist must have at his finger-tips. Dr. Rowbotham, who has obviously had much experience of goitre anaesthesia, accomplishes his task admirably. The text is clear and full of practical clinical details not to be found anywhere else. Emphasis is rightly laid on the conception that the anaesthetist must be not only a good technician in the operating theatre but a good doctor at the bedside, understanding more than a little of the patient's disease. A brief but lucid account is given of the surgical anatomy, symptomatology, and treatment of the various types of goitre in so far as they are of interest to the anaesthetist; only then does the author discuss anaesthetic technique. Every conceivable difficulty likely to be met by the anaesthetist is discussed. Those to whom an endotracheal tube is anathema will find a doughty opponent in Dr. Rowbotham, who worked with Cecil Joll at the Royal Free Hospital for many years. The experienced anaesthetist should pause before disregarding the advice given by him—to use an endotracheal tube for thyroid operations. The reader is told how the thyroid patient should be dealt with before operation and how to tackle the occasional acute emergency which sometimes occurs, even with the best-regulated operation team, after the operation is over.

The book is lavishly and, what is more important, helpfully illustrated with photographs and drawings. It is in fact up to the standard which medical readers now expect from Blackwell Scientific Publications. Now that this book is available, surgeons are entitled to expect from their anaesthetists a high standard of anaesthesia for goitre operations.

AMERICAN PAEDIATRICS

Mitchell-Nelson Textbook of Pediatrics. Edited by Waldo E. Nelson, M.D. Fourth edition, revised. (50s.) London: W. B. Saunders Company.

For its fourth edition the well-known "Griffiths and Mitchell" takes on a new editor and a new format. Prof. Waldo E. Nelson successfully manages a team of nearly fifty contributors, and the result is a double-column textbook of 1,350 pages, and 519 illustrations, many in colour. This is a first-class piece of work and a single-volume reference book of a high order. The editor is an old pupil of the late Dr. Graeme Mitchell, whose death at the early age of 52 was a tragic loss to paediatrics. Prof. Nelson starts off, therefore, with the advantage of knowing what the late editor had in mind for the development of the book. The reviewer cannot tell whether or not he has successfully carried out such plans, but the result is certainly a worthy product of the Temple University School of Medicine. The various monographs are well edited to secure a unity of presentation. References appear to be adequate and not too pedantically numerous. There is a good index. The quality of paper and of illustrations raises some envy in the reviewer, who has to use, daily, books of much inferior production, even if the subject-matter is beyond reproach. The new Mitchell-Nelson textbook is sure of as good a reception in this country as that of earlier editions. It gives an excellent account of American paediatric outlook and practice at the present time.

THE PARIS MEDICAL FACULTY

La Faculté de Médecine de Paris: Ses Origines, ses Richesses Artistiques. By Pierre Vallery-Radot. (Pp. 78; illustrated. No price given.) Paris: Masson et Cie. 1944.

Dr. Vallery-Radot, who is a well-known French author, has compiled this account of the Paris Medical Faculty, including descriptions of its admirable monuments and mediaeval apparatus. He has avoided the danger of making his work too erudite and long, or too archaeological and brief.

For 150 years up till the Revolution the Faculties of Medicine (1369–1792) and Surgery (1691–1775) were entirely separate, with their own teachers and students. In the first two chapters the author traces the history of both these faculties up to the time of their fusion, and in a well-documented way shows the struggle they had, not only among themselves, but against the Government and the people. Doctors had to contend against monk "fizicians" in monasteries and barbers who were unwilling to cede their rights to surgeons. In 1769, at the instigation of Louis XV, a new School of Anatomy was instituted. It was lavishly constructed, and served its purpose well for 25 years, when another college was opened—"L'École de Santé," memorable for being the end of the long-standing separation between physicians and surgeons and their interminable disputes. This school with its big lecture halls was devoted mainly to theoretical anatomy. Ten years later the College of Practical Anatomy was founded. In it students were taught "all the dissections and operations of surgery and were shown the advantages and inconveniences of operating." Despite all these improvements, which gave the Paris Medical Faculty two sets of buildings—theoretical on one side, and practical on the other—it was decided in 1936 to start the "Hôpital des Cliniques," embodying the latest features of modern medicine. Owing to war conditions this building is not yet finished. The penultimate chapter deals with the Dupuytren Museum and its immense collection of pathological anatomy specimens; it also houses the departments of anthropology, biology, and tropical medicine.

Paris is rich in medical artistic treasures and historic monuments. These have received much attention from the author, who includes many fine illustrations in his book. Dr. Vallery-Radot is keen on his subject and has elucidated many interesting facts from the bibliography, a list of which he gives at the end of the volume.

A CARDIAC ABNORMALITY

Pre-Excitation: A Cardiac Abnormality. Patho-Physiological, Patho-Anatomical, and Clinical Studies of an Excitatory Spread Phenomenon bearing upon the Problem of the WPW (Wolff, Parkinson, and White) Electrocardiogram and Paroxysmal Tachycardia. By Richard F. Öhnell. (Pp. 167; illustrated. 15s.) London: Henry Kimpton.

Dr. Öhnell's monograph describes studies of the spread of the excitation wave in the heart bearing upon the problem of the Wolff-Parkinson-White electrocardiogram. This is a very technical matter which is at present familiar only to cardiologists. Nevertheless, since the curves were first described by the above-mentioned writers in 1930 some 120 papers on the subject have appeared.

The syndrome is marked by the following characteristics. The conduction time from auricle to ventricle (P–R interval) is abnormally short. The ventricular complex which follows is abnormally prolonged and of unusual form. It resembles that of bundle branch block in some respects. These abnormal curves are not always present in any one patient, and various causes can make them disappear or reappear. The most satisfactory explanation for the curves is that there is a second conducting path to the ventricles, in addition to the bundle of His. The authors have adduced some very convincing evidence that in one case of theirs they found at necropsy a small bundle running from the left auricle to the left ventricle. This might transmit the impulse as well as the bundle of His, so that the left ventricle recorded two impulses, one a little before the other, with the result that the actual excitation time of the ventricle appeared to be prolonged. A further association of this conduction phenomenon is the frequent occurrence of paroxysmal tachycardia. It seems possible that the impulse causing these attacks circulates through the conducting channel. Normal curves may replace the abnormal on changes in posture, after thyroidectomy, and after quinidine and atropine. The abnormality has no pathological importance and is found in normal, healthy hearts.

The monograph is full but is by no means easy reading, for its disjointed style, not always clear in expression, makes assimilation difficult. The chief importance of the syndrome would so far appear to be the recognition of it as harmless, and its differentiation from the prolongations of conduction which are of pathological significance.

Notes on Books

In the abstracts which appear month by month in the *Tropical Diseases Bulletin* and the *Bulletin of Hygiene* (and in the *Bulletin of War Medicine* during the war) the Bureau of Hygiene and Tropical Diseases records the current literature on subjects coming within its fields of interest. From time to time the Bureau has been asked for information on some particular branch of medical work to be collected in the form of a monograph for the greater convenience

of persons engaged on a special problem. Such a monograph has recently been compiled for the Tsetse Fly and Trypanosomiasis Committee appointed by the Secretary of State for the Colonies, and though designed to meet a particular need it may prove useful to a wider public. *A Survey of Recent Work on Trypanosomiasis and Tsetse Flies* is therefore now published as Bureau of Hygiene and Tropical Diseases: Review Monograph No. 1, and provides a brief statement of work done, and some of the opinions expressed, by those who have worked at the different problems concerned with trypanosomiasis since 1931. The compilers are Dr. Charles Wilcocks, Dr. J. F. Corson, and Mr. R. L. Sheppard. Copies may be had from the Bureau, Keppel Street, Gower Street, W.C.1, price 7s. 6d.

Dr. JOSE MARTORELLI has expanded his thesis for the Doctorate of Medicine into a monograph entitled *Fitografia Alergologica*, published by the firm El Ateneo in Buenos Aires. It is a carefully worked out contribution, largely botanical, to the study of hay-fever in the Argentine Republic. The main part of the volume is devoted to the allergenic character of the flora of the Department of Rio Cuarto. In all there are 169 figures, mainly reproductions of photographs. An appendix by the author and his senior colleague, Dr. Roberto F. Carron, discusses the frequency of positive tests for pollinosis at the allergy centre in the National University of Cordoba.

We have received from Henry Kimpton a third and revised edition of E. V. COWDRY'S *Textbook of Histology*. The author is professor of anatomy in the School of Medicine of the Washington University, and the subtitle of the book is "Functional Significance of Cells and Intercellular Substances." As before, his method of presentation centres about the blood vascular system as the principal integrator, and he describes structure and function together in their natural fluid environments. The price of the book in this country is 35s.

Preparations and Appliances

RADIO AID TO HYPNO-NARCOSIS

Dr. A. OWEN-FLOOD writes:

Hypno-narcosis using an inhalant such as nitrous oxide–air gives an all-round satisfactory method for psycho-analysis. There are, however, a few difficulties in its administration which not even the strictest attention to technique can overcome. These are as follows:

(1) It is essential to have a gas-tight mask if gas–air analgesia is to be efficient.

(2) It is impossible in hypno-narcosis to attain this if the patient is to talk under its influence. Unless the mask is lifted all that emerges from its depths is a muffled gabble of groans. With the lifting and subsequent replacement a "swinging" type of analgesia is produced where the patient comes up into a more conscious level of hypnosis, makes a response which may not be a true guide to the state of the subconscious, and again sinks into deeper hypnosis.

FIG. 1

(3) What the radio crooner dinned into our ears some months ago—"It is not what you say, but the way you say it"—may not be quite true in psycho-analysis, but the tone and method of expression are certainly useful evidence.

(4) The necessity for the analyst to take down all that is said, which is more an annoyance than a difficulty. Being no calligraphist myself, and remembering the poor reputation in that respect of most of my colleagues, a sure method of recording the actual words would be a boon, and would earn the blessing of our hard-working secretaries.

The apparatus illustrated will, I believe, eliminate all these difficulties. It consists essentially of a small microphone fitted inside a standard thyroid mask of rubber composition. The microphone is a small crystal type, sensitive to the merest whisper. It is coupled by leads to an audio-frequency amplifier and dynamic producer. This is a neat apparatus measuring 12 in. by 8½ in., and standing 9½ in. high. A more compact and lighter apparatus is possible. This one is in its rough experimental state. It consists of three pentode valves used in a resistance-coupled circuit made to have a rising characteristic frequency, and is specially compensated to eliminate undesirable echo which results from close proximity of the mask to the patient's mouth and the confined space in which the microphone is fitted.

Inset in the cabinet is a loud-speaker. A plug is fitted for another speaker with which it is possible to transmit the voice to a distance, such as another room. This would allow details to be noted and recorded by a confidential secretary.

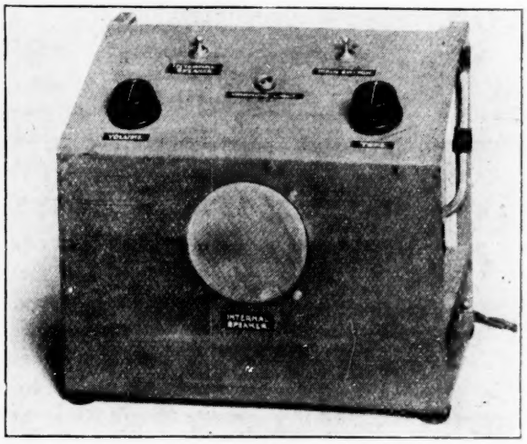

FIG. 2

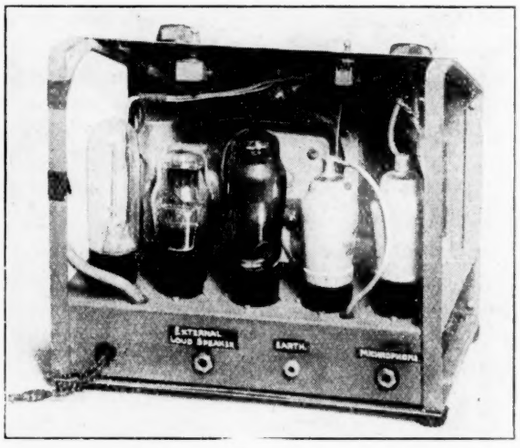

FIG. 3

The control panel consists of two switches which, pressed to the "on" position, light a small ruby button This warning light shows that the apparatus is in circuit, and after a short pause for the preliminary "warming up" is ready for use. The speaker in the apparatus can be switched off and allow the remote speaker to function only, or the latter can be disconnected completely from the machine. There is also fitted a volume control, producing anything from a whisper to a roar, and a tone control, giving perfect voice reception.

The makers are now going into the question of fitting a handy recording device, details of which are not yet available. They are handicapped by the shortage of materials and labour.

To sum up: the apparatus allows a quiet state of level hypno-narcosis. The voice is heard clearly and distinctly and is capable of being amplified and transmitted to a distance. When conditions permit, a recording device can be fitted and records made of the voice. These can be played on an ordinary gramophone turn-table.

I wish to thank the directors of Messrs. Stanley Cox Ltd., 11, Gerrard Street, W.1, who made the experimental model, and who are ready to supply a more efficient and portable article than the one illustrated, and Messrs. L. Lowery and R. L. H. Ewin, of the research department of the above firm, for their untiring work in the production of the sensitive instrument. I am grateful for the encouragement of Dr. Marion Greaves, West End Hospital for Nervous Diseases, for making the first trial, and reporting and suggesting improvements in the apparatus; and to Dr. C. H. Rogerson, Cassel Hospital, Stoke-on-Trent, who has promised to make a further trial for me.

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ARE THE PEOPLE MORE HEALTHY?

As a result of the propaganda during the past six years Britain has become more health-conscious, and the reactions of a Press with a limited supply of paper show that health now has a news value. The maintenance of as high a standard of well-being as possible among the civilian population was essential for the successful waging of war, and the many statements on improved or better general health among the public were accepted loyally and without undue criticism of their obvious propaganda nature. The assessment of health for comparative purposes during the war was difficult, because there was no standard available and accurate information was lacking. The death rate gives a broad indication of the nation's health, but mortality is not very sensitive to relatively small changes in environmental conditions, and even large adverse deviations in nutrition do not immediately affect the general death rate. Tuberculosis, however, reacts fairly quickly to adverse conditions, and it soon became apparent that, as in 1914–18, with the outbreak of war there had been a reversal of the favourable pre-war trend of tuberculosis mortality. One of the most disquieting features of the early war rise was the increased mortality of children from tuberculous meningitis. Infant and child mortality are sensitive to social, economic, and environmental conditions, and for comparative purposes these rates generally reflect the condition of the general population fairly accurately. Priority allowances of food for children naturally invalidated any attempt to reach conclusions concerning the adult population from the children's experience. And only an approximate and indirect estimation of the nation's health is given by the trend of the notifiable diseases.

In January, 1944, an attempt was therefore made to get a direct estimation of the sickness experience of the nation. The field workers of the organization known as the War-time Social Survey interviewed a random sample of the civilian population between the ages of 16 and 64 in all parts of the country. These surveys were repeated at intervals, and later the investigation was extended to cover ages over 65, although results for the latter age group have not yet been published. The number of persons interviewed in any one survey varied from 2,000 to 2,500. The information sought was of the illnesses experienced during the preceding three months. Generalizations from the sample to the whole population may be affected by the smallness of the sample—only 1 in 20,000—the ability to remember the details of any sickness experienced during the preceding three months, and the fact that many of the complaints were self-diagnosed. As different areas were covered in each survey the continuity of the trends, particularly those of influenza and colds, may be affected to some extent by chance, because these diseases do not always have the same time of maximum incidence even in adjacent areas. Brief summaries of the findings of these health surveys have been published periodically in the *Monthly Bulletin* of the Ministry of Health and the Emergency Public Health Laboratory Service. The sicknesses have been grouped into four categories: serious—producing incapacity for work for four weeks or more or involving risk of death; moderate or mild—sickness incapacitating for three days or more; minor—ailments which do not incapacitate for as long as three days at a time; symptomatic—ill defined without a definite diagnosis.

During the period October, 1943, to May, 1945, about two-thirds of the persons aged 16–64 recorded at least one new illness or the recurrence of an old one starting during the period of three months preceding the interview. The monthly incidence of serious illness has a pronounced winter rise and a summer minimum, the trend being similar to that of mortality. The proportion of persons recording a serious illness has decreased during the period: in the winter of 1943–4 it was 2%, and in the following winter the percentage was only slightly over half this value. The proportion having a moderate or mild illness has declined even more—from over 15% in the winter of 1943–4 to almost a third of this rate in the winter of 1944–5. The monthly trend of minor ailments does not show any definite progression, and high values have been recorded in winter and summer; the percentage monthly incidence over the whole period varied from 13 to 28. Sickness with ill-defined symptoms follows a similar trend to that of minor ailments but at a much lower level, the monthly percentages ranging from 3 to 8. There are not the same large differences in the average number of days of incapacity as there are in the attack rates. The numbers of days lost by serious illness per 100 persons exposed to risk were 79 and 64 for November and December, 1943, and 64 and 55 for November and December, 1944. Days lost from moderate or mild illnesses were 110, 117, 78 per 100 persons per month during November, 1943, to January, 1944, compared with 54, 57, 62 for the same months in the following year. The monthly average for minor ailments ranged from 5 to 22 during the period. There was little alteration in the length of serious illness; the duration per month fluctuated from 23 to 48 days.

Moderate or mild sickness has become increasingly important as a cause of lost time: from November, 1944, to March, 1945, the average length of illness varied from 10.4 to 12.9 days, while the range for the preceding months was 5.3 to 9.3. The number of days of illness for minor ailments varied from 0.2 to 1.4. Influenza and colds form the most important cause of sickness; the average monthly

incidence per 100 exposed to risk during the winter of 1943–4 was 21.6 for males and 22.2 for females, and in the following winter the rates were 17.8 and 18.4 respectively. Rheumatism appears to be slightly more prevalent among women than among men, and this complaint was recorded more frequently in the summer than in the winter—during the summer of 1944 the average monthly incidence was 4.5% for males and 6.0% for females. It must be repeated here that the "rheumatism" was often self-diagnosed. Women made more frequent mention of nervous ailments than men: the number said to be affected by "nerves," at each interview, ranged from 1.2 to 3.5% among the males and from 2.7 to 8.3% among the females. The incidence of debility and certain nervous symptoms was 1.5 to 4.1 for men and 2.6 to 6.4 for women. The percentage suffering from neuritis, cause unknown, varied from 0.1 to 1.0 for males and from 1.0 to 1.7 for females. Functional digestive disorders appear to have increased slightly by the end of the period, but there was no obvious sex differentiation—in three of the six interviews the female attack rate exceeded the male rate. The incapacitating effect of these diseases differed between the sexes. "Nerves" caused 1% or more of the women to be laid up for one day or more in three months on four out of the six occasions, while the percentage of "nervous" males was only 0.6 to 0.8 during five of the periods. For the other three groups of complaints combined the males had more incapacitating sickness than the females: the percentage of males laid up for a day or more in three months varied from 0.6 to 2.2, while for females the rates were from 0.4 to 1.0.

For the period November, 1943, to January, 1944, an analysis was made of the number of visits to doctors. The average visits per person in the three months, whether ill or not ill during the period, were 1.04 for males and 0.88 for females to the doctor's house, and visits by the doctor to the patient's home were 0.45 for males and 0.56 for females. Attendances at hospital out-patient departments were 0.14 for males and 0.10 for females, and at clinics, place of work, etc., 0.09 for males and 0.12 for females. Expressed on a daily basis, the average visits per day for each 1,000 persons was 18.4, of which 5.7 were at the patient's home and 10.2 at the doctor's house. These values relate only to persons aged 16–64; they would be considerably higher if ages under 16 and age 65 and upwards were included.

There are two obvious weaknesses in this type of survey. The first is the smallness of the sample, and the second is that reliance has to be placed on the patient's description and diagnosis of his illness—or rather on his interpretation of the doctor's diagnosis. And the second weakness must be increased by the difficulty of finding suitable persons to conduct the survey. If in peacetime far larger samples of the population could be investigated, and if people get used to the idea of social medicine conducted in this way, then the survey started during the war should bring in more and more useful returns, and enable those in charge of, and working in, the Health Service to get a much more accurate measure of the health of the people than has been possible in the past. What we want is more information and less propaganda.

SEX HORMONES

During the war a number of books on endocrinology appeared in the U.S.A. As might be expected, some were good and some were bad, but it may not be too severe to say that, while the good were only fairly good, the bad were very bad. The worst were those which sought to "jump the band waggon" by implying a special wartime importance for endocrinology. In reality endocrinology appears to have been one of the few fields of research which yielded little or nothing for the war effort. In this country, and probably in Europe, endocrinological publication was much reduced during the war. It is likely, however, that the lull is about to end. In the occupied countries of Western Europe many scientists, debarred from their laboratories or having exhausted their reagents and eaten their experimental animals, devoted themselves to writing, and several books on endocrinological subjects have appeared or are on the way from France and Holland. It will be interesting to see what is forthcoming in this country, and how the very complex subject of endocrinology is tackled in post-war publications. One of the most difficult branches is the endocrinology of reproduction, the theme of a recently published book by Mr. Harold Burrows.[1] The subject has expanded enormously in little more than a decade, and a vast mass of material has to be dealt with by reviewers. The difficulties of presentation are obvious. How should the material be stratified—according to hormones, organs, animals, or phases of the reproductive cycle? How much fundamental biology should be included? Should the aim be to include every reference, catalogue fashion, or attempt a general description in broad terms? Should one illustrate profusely or not at all? Those who are primarily biologists prefer to approach the subject from the point of view of the integration of bodily function. They ask, for instance, what chain of events results in a rabbit ovulating after mating and only then? Or, why does the mammary gland burst into secretion after parturition? By contrast, those to whom a hormone is something in a bottle on a shelf naturally have a different approach. They ask—if an extract of men's urine grows a comb on a capon, what will it do to a pregnant rat? Or, if progesterone stimulates the ovipositor of a fish, will it relieve dysmenorrhoea? It is a remarkable testimonial to the size of the endocrinological target that such grapeshot research has sometimes scored a bull.

Mr. Burrows takes a firm line with the question of literary logistics. He arranges his material according to the various hormones, and under these headings mainly according to properties and to the organ or tissue acted on. This arrangement facilitates reference, but it produces some odd results. For instance, the first three pages of the book are largely taken up by a description of the effects of proteolytic enzymes on gonadotrophins—a rather prominent position for such a subject. References to the literature are voluminous rather than selective, and will delight readers of the kind who turn first to the index of authors. There are no half-tone illustrations and no diagrams other

[1] *Biological Actions of Sex Hormones*, by Harold Burrows, C.B.E., Ph.D., F.R.C.S. Cambridge University Press. 42s.

than chemical formulae. The result is a book which is a mine of information about the effects of reproductive hormones and related substances when administered to the animal, and a book which cannot fail to be much used for reference purposes. In some ways, however, it is unsatisfying. To many workers the action of exogenous hormones is of interest mainly in so far as it throws light on the build-up of the normal animal. As it concerns the hormones associated with reproduction, this approach demands a considerable knowledge of the changes occurring in the normal reproductive processes. Mr. Burrows, however, gives little attention to the biological background of the reactions he describes, and the occurrence of oestrogen in the ovarian follicle is catalogued in the same non-committal way as its alleged presence in asphalt. Similarly, actions of the gonadal hormone which in our present state of knowledge seem trivial and incidental are not sharply differentiated from functions essential for reproduction.

In general one wishes the author had taken more trouble to indicate the probable relevance of the observations he records, even if this had meant more selection of his material. Interpretation is, of course, always dangerous, and he may well have been dismayed by the incredible miscellany of observations recorded in the literature and by the notorious propensity of reproductive endocrinology to confound its interpreters. Nevertheless, while all things are possible, some things are more likely than others even in this phantasmagorial field, and more expression of opinion on the part of the author would have enlivened the book. Its two-page glossary contains an excellent summary of the definitions of international units of sex hormones, but is otherwise so selective as to be of little value; and there is a list of proprietary hormone preparations, useful but perhaps somewhat out of place in a scientific treatise. Mr. Burrows's book is one which all those interested in the subject should have available for reference, and one must congratulate the author who, after a busy life as a surgeon, not only has made important contributions to research but has accomplished successfully a literary undertaking of this magnitude.

SINUS BAROTRAUMA AND AEROSINUSITIS

The war of 1939–45 has created conditions for high-altitude flying. It gave the man on top great tactical advantage. Thin air encountered at such altitudes increases air speed for any given power output and renders flying comfortable under adverse weather conditions. Until high altitudes became common few people were ever subjected to great changes in barometric pressure. The effects of these pressure variations upon closed cavities containing gas and air were observed in the syndrome of sinus barotrauma or aerosinusitis, characterized by congestion and acute or chronic inflammation of the sinus membranes. Temporary or permanent changes in the sinus mucous membrane, such as mucosal or submucosal haemorrhage, may result, depending on the amount of barotrauma. Pain over one or more sinuses, usually the frontal, often described as a "sting over the eye" or "a blow by a crowbar," is commonly the onset of the syndrome. This severe form is associated at times with stripping of the mucous membrane or submucosal haemorrhage, whilst in less dramatic instances the pain develops slowly on descent or after return to ground level. An explanation advanced by McGibbon[1] is that during ascent the relatively increasing pressure within the sinus cavity causes an ischaemia of the mucosa. On descent, with a relatively decreasing pressure of the sinus air, engorgement of the mucosal capillaries results in oedema, effusion, and haemorrhage. In the absence of any previous sinusitis *x*-ray evidence[2] of opacity or thickened lining membrane is suggestive of barotrauma. In a large number of patients, however, especially those in whom the only abnormal signs are radiological, it is almost impossible to differentiate cause from effects of barotraumatic changes.

A submucous haematoma of the frontal sinus was first described by Herman[3] and later by P. A. Campbell.[4] In a case of recurrent frontal sinus barotrauma an apparent "polyp" removed by McGibbon was found to be a haematoma encapsulated in a densely collagenous fibrous tissue and undergoing organization. There was no inflammatory infiltration to suggest infection. Experimentally the picture has been reproduced by P. A. Campbell and his co-workers in a dog decompressed from 28,000 ft. (8,500 m.) after tight packing of the naso-frontal duct. Examination disclosed a large haematoma extending upward from the internal orifice of the duct. Multiple small mucosal haemorrhages were found to arise between the epithelium and the periosteum in lightly vascularized areas of the mucosa. The mucosa of the unobstructed sinus was normal. Biopsy sections of antral mucosa have been examined in a few cases of recurrent sinus barotrauma by C. Campbell[5] in a series of cases observed in the R.A.F. Subacute or chronic inflammatory changes, marked oedema, congestion, small mucous or submucous haemorrhages, plasma cells, polymorph and lymphocytic infiltration of the mucosa, and a moderate degree of fibroblastic hyperplasia were observed. But exactly similar changes may be found in the mucosa in subacute and chronic infective antritis in which there has been no question of sinus barotrauma, so that in these few barotraumatic cases the histological appearances are probably those of a complicating infective antritis. Age, amount of flying experience, nature of aircrew duties, and type of aircraft flown are not predisposing factors, and the aetiology of the syndrome is that of many contributory factors. These may be developmental, traumatic, allergic, infective, neoplastic, or mixed. It is difficult to assess the incidence. Figures are unreliable, as in many patients the contributory factor clinically overshadows the effects of barotrauma. P. A. Campbell gives an incidence of otitic barotrauma as 1 in 20. In a series of cases observed in the R.A.F. and reported by McGibbon the relationship was approximately 1 case of sinus barotrauma to 4 of acute otitic barotrauma. In a series of experimental cases subjected to decompression the ratio was 1 to 5. It was further noted that the results of infection of the upper respiratory tract are the most frequent contributory factors. At the same time it must be stressed that many individuals suffering from acute and chronic upper respiratory infections, established infective sinusitis, and polyposis fly without experiencing any ill effect.

The diagnosis of sinus barotrauma is founded largely on the patient's complaint of pain, and the syndrome lends itself to hysterical mimicry and perpetuation as a means of escape from duty. Observations extending over a long period and based on the examination of a large number of cases have led to this conclusion. The differentiation of true sinus barotrauma from neuropsychiatric symptoms

[1] *J. Laryngol. Otol.*, Nov., 1944, **59**.
[2] Schneider, M., *Amer. J. Roentgenol.*, June, 1945 **53**.
[3] *Z. Hals. Nasen. Ohren.*, 1941, **48**, 87.
[4] *Arn. Otol. Rhinol. Laryng.*, June, 1944.
[5] *J. Laryngol. Otol.*, Nov., 1944, **59**.

which simulate the syndrome is aided by an experienced examiner's observations of the patient's reactions during a standard decompression test.

Prophylaxis can be summed up briefly. Flying should be avoided by anyone suffering from an acute or chronic upper respiratory infection. Treatment is expectant, and any manifest contributory factor should be corrected. Relief of symptoms occurring during descent from height can be obtained by re-ascent, if in an aircraft, or decompression in a chamber, followed by very gradual loss of height.

ISLET-CELL TUMOURS

The literature on tumours of the islets of Langerhans and the symptoms with which they are associated is piling up. An admirable short historical survey and report of a case successfully treated by surgery have recently been given by Stanley R. Maxeiner and Harry E. Bundy.[1] These tumours were first recognized as long ago as 1902, but, probably because the first twenty reported were asymptomatic, were thought for many years to be of academic interest only. The discovery of insulin and insulin shock led soon to the realization that islet-cell growths may often cause symptoms due to hypoglycaemia: Whipple[2] has collected 149 cases of this type.

According to their size and malignancy the tumours may be wholly without effect on function; may cause minor disturbances amenable to medical treatment by glucose and careful regime of life; may require surgical treatment; may cause fatal uncontrollable hypoglycaemia—for example, when metastases form in the liver. The diagnostic criteria are, according to Whipple, symptoms of insulin shock coming on in fasting or fatigued persons; a blood-sugar level of 50 mg. or less per 100 ml.; and prompt relief of symptoms by glucose. Maxeiner and Bundy, however, stress that the diagnosis is difficult in many cases, and, as in hyperthyroidism, this must clearly be so in early and mild phases of the disorder. Glucose-tolerance tests are unreliable, and administration of alloxan is not an effective diagnostic measure. Other causes of hypoglycaemia must be excluded. Usually the tumours are single, but in about 10% of cases two or more have been found. In Maxeiner and Bundy's case eight inactive tumours and one active were found. Whether a condition analogous to primary thyrotoxicosis affects the islet tissue, as suggested by Frantz,[3] is uncertain. About two-thirds of all tumours are apparently benign, one-tenth certainly malignant, and the remainder doubtfully so. They are commonly found in the tail and body of the gland. (A paper by Louis P. Good[4] on the histopathology of the tumours suggests that the tumour capsule is really compressed duct wall of the pancreas, the presence or absence of a capsule depending on the site of origin of the growth.)

In describing the surgical approach Maxeiner and Bundy emphasize that it may be very difficult to identify the tumour (or tumours) at operation; and several cases have been reported in which two or more operations were performed before a cure was obtained. When no growth can be found they advocate resection of the body and tail of the pancreas as being the most usual site of the tumours; the alternative is to close the wound and wait until such time as the tumour is big enough to be recognized at a subsequent laparotomy. Both courses have obvious disadvantages.

By reason of the nervous manifestations which they often cause the early recognition of islet-cell tumours is of obvious importance. Dizziness, nausea, pallor, and sweating may at first be mistaken for part of a psychoneurosis or even alcoholism; convulsions, clonic contractions, and coma may, as in the case described by Maxeiner and Bundy, lead to a diagnosis of epilepsy; while maniacal seizures may produce serious consequences for which the patient cannot be held responsible. Citing another case, M. S.-M. Rayner, C. H. Rogerson, and J. G. Jones[5] point out that a diagnosis of hysterical or convulsive fits should never be made until hypoglycaemia has been excluded. Minor degrees of insulinogenic hypoglycaemia may not be uncommon, even when a firm diagnosis cannot be made, and it would seem justifiable to give glucose a clinical trial in any case of recurrent nervous manifestations of the type described, especially if they occur in fasting conditions (e.g., early morning) or after physical exertion.

[1] *Surgery*, 1945, **18**, 171.
[2] Ibid., 1940, **8**, 289.
[3] *Ann. Surg.*, 1944, **119**, 824.
[4] *Surgery*, 1945, **18**, 159.

THE OBLIGATION OF THE PHYSIOTHERAPIST

As a result of the war the science and practice of physiotherapy have gained wide publicity, and the chartered physiotherapist is recognized as an essential member of the rehabilitation team. Nevertheless, far too little is still known both of the standard of training and of ethical conduct required of physiotherapists. A body for the training, examination, and registration of physiotherapists has been in existence since 1894, the date of the foundation of the I.S.T.M.. A Royal Charter was granted to that Society in 1920 when it took the name of the Chartered Society of Massage and Medical Gymnastics, and in 1943 it became known as the Chartered Society of Physiotherapy, thus denoting the increasing scope of a physiotherapist. Over many years the standard of training laid down by the Chartered Society has been progressively raised, and the length of the course has been increased from a few months in 1894 to the present length of 2½ years. When the new curriculum is introduced the training will extend over 3 years.

From the earliest days the Chartered Society has insisted on a strict ethical code for its members. Before being admitted to the Register a chartered physiotherapist must sign an undertaking "not to undertake any case except under the direction of a registered medical practitioner." Attention is called to this by-law in a letter published in our correspondence columns from Dr. W. S. C. Copeman, Chairman of the Council of the Chartered Society of Physiotherapy. This ethical by-law affects not only the chartered physiotherapist but also the patient and the medical practitioner. It safeguards the patient against loss of time and money and the consequences of unsuitable treatment, while the doctor knows that he will have the loyal co-operation of the physiotherapist and highly skilled treatment for his patient.

Dr. R. D. Lawrence will deliver the Oliver-Sharpey Lectures before the Royal College of Physicians of London on Tuesday, March 19, and Thursday, March 21, at 5 p.m. at the College, Pall Mall East. His subject is "A Case of Lipodystrophy and Hepatomegaly with Diabetes, Lipaemia, and other Strange Metabolic Disturbances suggesting a New Aspect of Insulin Action."

Following the death of Sir Comyns Berkeley, the Central Midwives Board has elected Mr. Arnold Walker as chairman and Mr. J. P. Hedley as vice-chairman for the rest of the Board year until March, 31, 1946.

[5] *Lancet*, 1943, **2**, 476.

TRAVELLER'S OEDEMA

BY

K. ZACOPOULOS, M.D.

Chief M.O. of the Greek Sacred Regiment (Raiding Forces)

In March, 1944, forty Greek officers, including myself, succeeded in escaping to Smyrna, and from there we took a train to Aleppo, Syria. The journey was most uncomfortable as it lasted four days and we were very crowded. The younger ones among us took a little exercise, pacing up and down the corridor and station platforms, but others remained almost motionless throughout the journey. Before we reached Aleppo I was sent for to look at an officer whose feet were swollen. A second case soon appeared with the same symptoms, then a third, and a fourth, until eventually an inspection of all my fellow travellers revealed that eight of them had oedema of the ankles.

A month later another party of Greek officers reached Smyrna, and among them was Dr. Hinaris. During their journey from Smyrna to Aleppo they had had to stand for the best part of three days. Extensive oedema had appeared in the lower extremities of every member of this group towards the end of the second day of the journey.

The eight cases I attended presented oedema of both lower extremities localized to the ankle and lower third of the leg, without further signs of inflammation or of trauma. The ankles felt slightly painful and there was also a sensation of painful weight in the feet. The symmetrical oedema was not marked and hardly extended beyond the lower third of the leg. The extremity of the foot inside the shoe was not involved. No sign of lymphangitis was present, and all the ankle-joints appeared unaffected apart from the oedema and slight subjective pain during movements. We found no rise of temperature or alteration in the general condition in any of the patients. As a cardiologist I examined their circulatory systems with care and could find no abnormality.

Dr. Hinaris's cases were very similar except that the oedema was more severe and extended in some cases to one-half of the leg, and in the more severe cases to the lower third of the thigh. All our patients wore civilian shoes, in which they had escaped from Greece and travelled through Turkey, Syria, and Palestine, until they reached Egypt.

Diagnosis

The clinical appearance of these cases excluded right from the start all the conditions usually accompanied by oedema of the lower extremities. Wounds were completely absent. There was no evidence of inflammation, or of phlebitis, or of lymphangitis and lymphadenitis. There was nothing to suggest urticaria, or any trophic or deficiency oedema. None of these men had suffered from excessive malnutrition, and during our stay in Smyrna we were far from being undernourished.

It was not a cardiac oedema because careful examination of the cardiovascular system revealed no abnormality; furthermore, all our patients were regular officers who had been considered fit for military service. It was not a renal oedema because none of our patients had pyrexia, renal pain, oliguria, oedema of the eyelids, or any other symptom of nephritis.

Thus, excluding the above, we were driven to the following mechanical explanation, which we think is quite adequate.

Pathogenesis

The patients of the first group, as well as those of the second, moved very little or not at all during the journey, which is the main cause of the appearance of the oedema. The first group sat continuously with their legs suspended. The second group had to stand for hours, not doing any of the normal movements which are essential if oedema of the lower extremities is to be avoided. In this manner they unconsciously placed a mechanical strain on the venous circulation.

Movements of the limb muscles assist the venous circulation by pressing the blood from the capillaries. My cases were men in whom, apart from the immobility, the sitting position with legs hanging down had further impeded the venous return because of the bending of the knees and the pressure in the popliteal space. In the cases reported by Dr. Hinaris the patients had been standing for long hours without movement, and this caused a more extensive oedema. In our opinion the mechanics of the condition are as follows:

The absence or reduction to the minimum of movements of the legs (voluntary or involuntary) practically stopped those contractions of the muscles which normally aid the flow of blood from the capillaries and small veins. These began to enlarge in order to receive, in addition to the existing stagnant venous blood, the new blood which was continuously moving from the arterioles through the capillaries to the small veins. Thus in the absence of the essential muscular movements a state of comparative venous stasis ensued. This factor was even more marked in the lowest venules because of the greater hydrostatic pressure of the column of venous blood. Thus the oedema began, and for as long as the lower extremities remained inactive the oedema increased.

In the first group of patients I advised movements, active and passive, especially walking, and slight massage of the oedematous area. All my patients recovered completely, and when we detrained at Aleppo none of them had oedema. In the second group of patients, too, recovery was automatic within a few days of reaching Aleppo and being able to move about freely inside the refugee camp.

Conclusions

(1) There is a form of oedema caused by inactivity to which travellers by sea, rail, or road are subject. "Deck ankles," described in para 150 of *A.M.D. Bulletin* No. 21 of March, 1943, appears to be the same condition. We consider it advisable to call this "traveller's oedema," as only this term covers all the cases that may appear. We prefer the term to two others which could be suggested: "inactivity oedema" and "orthostatic oedema." The first lays stress on the lack of movement but not on the vertical position of the lower extremities. Also we must not overlook the fact that inactivity alone in many cases does not cause oedema. The second term lays emphasis on the standing position—a most important factor, as was observed in the second group of patients; but standing without inactivity will not cause oedema of the ankles in healthy individuals. Even patients with varicose veins will not develop oedema if the heart is normal and their lower extremities are active.

(2) Traveller's oedema is caused purely mechanically in cases in which there is a great diminution, or complete absence, of muscular movements of the extremities in persons who are sitting or standing for prolonged periods.

(3) Treatment is simple. Repeated active or passive movements of the lower extremities must be started immediately. Tepid bathing of the feet is advisable, with simultaneous massage and passive movements of the toes, ankles, and calves. An elastic stocking might be tried in those few cases which do not respond promptly to massage and tepid baths.

(4) Prophylaxis is obvious. Travellers must be warned against complete inactivity, and whenever possible must avoid standing up during long journeys.

SOUTH AFRICAN MEDICAL CONGRESS

For the first time since 1919 the Medical Association of South Africa will this year hold its annual scientific meeting and medical congress. The meetings will take place in Durban from Oct. 7 to 12, 1946.

The organizing secretary, Dr. C. M. Murray, Medical House, 35, Wall Street, Capetown, invites members of the British Medical Association from Great Britain to attend the scientific meeting and to take part in its proceedings either by reading papers or in some other way. He suggests that the congress will provide an excellent opportunity for renewing and cementing the friendship between medical colleagues in South Africa and Great Britain.

The Council of the B.M.A. received the invitation with pleasure at its meeting on Jan. 30, and expresses the hope that some members could make it convenient to attend the congress and represent the Association. The Secretary will be glad to hear from any member who contemplates visiting South Africa.

L.C.C. HOSPITAL SERVICE

LARGE FUTURE DEVELOPMENTS

Wide-ranging proposals for the post-war restoration and development of its general and special hospital service were laid before the London County Council by its Hospitals and Medical Services Committee on Feb. 19. The most urgent need is the repair of war damage; of the Council's 76 hospitals, 73 have been damaged to a greater or less degree, and the cost of repairs is estimated at £2,600,000. The proposals are divided into short-term (the next five years) and long-term.

Short-term: Provision of more special units for certain types of medical and surgical treatment; improvement in facilities for treatment of tuberculosis; restoration of maternity accommodation to pre-war basis; extension of appointments system for out-patients; improvements in arrangements for visiting of patients; improvement of hospital catering; permission for medical and nursing staff to live out; establishment of medical, nursing, and domestic staff committees in each hospital.

Long-term: Provision of new hospitals in Tooting and Crystal Palace areas; acquisition of additional land for hospital expansion; provision of new maternity blocks; provision of 20 new out-patient departments; subdivision of wards to secure greater privacy; provision of special fracture units at general hospitals; provision of additional beds for tuberculous patients.

At a Press conference Mr. A. REGINALD STAMP, chairman of the committee, said that it was thought that London might be divided into some 21 districts, each of which would be served by a general hospital dealing with acute cases, with other hospitals in the district related to it, and supplying in each district what is considered in the medical profession to be a complete medical service. In 11 of these districts the main hospital might be a Council hospital, and in the others a voluntary teaching hospital. Mr. Stamp emphasized the great amount of teaching material in the Council's hospitals, and said that he hoped that his committee would be empowered to negotiate with existing teaching hospitals with a view to making certain Council hospitals available for teaching. There was good will on both sides, and the L.C.C. hoped as equal partners with the voluntary teaching hospitals to make an essential contribution to medical education.

Medical Staff Committees

The complexity of hospital organization and the increasing use made of the services of specialists have seemed to the committee to afford strong arguments for the introduction into the Council's hospitals of medical staff committees, corresponding to the medical committees in voluntary hospitals. The function of these committees would be to advise on the best use of accommodation, care of patients, improvements in staffing, and provision of equipment. If the medical superintendent agreed with such a committee's recommendations, these, within limits, could be acted on forthwith, or, when necessary, transmitted by the medical superintendent to the county medical officer; when the medical superintendent disagreed they would be transmitted by him to a higher level with his independent observations.

Concerning medical superintendents the report of the Hospitals and Medical Services Committee goes on to say:

"The clinical responsibility of medical superintendents for patients has been the subject of criticism, though some of it is not well founded. The trend of our administration, however, has been to place clinical responsibility upon the specialist in charge of the medical, surgical, or maternity and gynaecological units in which a patient is treated, and we are of opinion that this trend should continue."

Responsibility for treatment might be allocated as follows: (1) whole-time specialists in charge of beds should be completely responsible for the treatment of the patients occupying those beds; (2) part-time consultants should, in appropriate circumstances, be similarly responsible (involving a revision of the terms on which part-time consultants are now remunerated); (3) the medical superintendent should retain responsibility for seeing that every patient is under the care of the appropriate medical officer, and for the treatment of all patients not in the care of a consultant.

"The medical superintendent should, however, remain responsible for matters of general administration and discipline, and, after suitable consultation with the clinicians, for the allocation of beds. He should also remain responsible for the co-ordination of all services and departments, for preventing the spread of infection, and for ensuring that the instructions of the hospital committee are carried out."

It is anticipated that at least 100 additional whole-time medical officers of the registrar and houseman grades will be needed. An increased number of consultants and specialists will also be necessary, although no estimate of the number can yet be made. The number of whole-time specialists will need to be increased, and it will be desirable for a specialist to serve a group of hospitals.

Special Units

Special units for certain types of medical and surgical treatment will be situated at hospitals suitable for postgraduate training. Hammersmith Hospital (north of the river) and Lambeth Hospital (south) suggest themselves. Fracture units will probably be needed in most of the Council's "district" hospitals. Four rehabilitation centres are forecast, as well as two units for plastic surgery, one for major neurosurgery, one for major thoracic surgery, and six radiotherapy centres.

Health centres under the National Health Service scheme might adjoin Council hospitals wherever suitable accommodation can be found. The Council at present has maternity units in thirteen of its general hospitals; additional units can be opened at three others as soon as staff is available, and at two more when repair of war damage is effected. It is proposed that each district hospital should have not fewer than 50 maternity beds; also that 5,000 beds should be allocated in London for the chronic sick.

"The most urgent need, clearly, is for the repair of war damage, but progress with this work will be dependent upon the availability of labour and materials. Other problems may wear a different complexion when the Government's National Health Service proposals are known."

Reports of Societies

PENICILLIN IN TREATMENT OF SYPHILIS

At the meeting of the Section of Experimental Medicine and Therapeutics of the Royal Society of Medicine on Feb. 12, with Dr. E. N. ALLOTT presiding, a discussion was held on "Penicillin in the Treatment of Syphilis."

Lieut.-Col. JAMES MARSHALL, before speaking of observations first in early and then in late syphilis, said that it needed at least five years to assess the value of any method of treating early syphilis, and therefore the dosage and treatment schedules recently employed for penicillin had of necessity been experimental. The experiments had, however, been on a large scale and allowed of certain conclusions and assumptions.

The treatment of early syphilis had so far been carried out mainly by multiple intramuscular injections using aqueous solutions of penicillin. With this method, almost independently of the total dosage used, *Sp. pallida* disappeared from surface lesions in about 12 hours, lesions healed quite rapidly, and positive serological reactions tended to reverse towards negative. Very large numbers of cases had been treated in the Allied armies by 2,400,000 units penicillin for seven and a half days. The speaker's own experience in a small series of 67 cases was that 10 could be classified as treatment failures at the end of six months' follow-up. A recent check at the central syphilis register at the War Office showed that in 270 cases of early syphilis treated with 2,400,000 units penicillin and followed up for six months the failure rate was 8%. At the same time a check was made on the same number of cases treated by the "20-day" arsenoxide and bismuth method, and the failure rate was only 2%.

In planning a more satisfactory method of treatment he was guided by an American observation that there was probably a synergistic action between penicillin and arsenoxide. A scheme was evolved which, after certain modifications, now consisted in giving 2,400,000 units penicillin in seven and a half days and 10 daily injections of 0.09 g. neohalarsine or 0.06 g. mapharside. Any arsenical toxic effects were rare; if they did occur arsenical treatment was stopped and the total dose of penicillin was

increased to 4,000,000 units (100 injections of 40,000 units). So far 360 cases had been treated—240 by this method and 120 by an earlier modification consisting of the same amount of penicillin and 14 daily injections of the arsenic compound. Only about one-third of this number had been so far successfully followed up for four to six months after completion of treatment, and so far there had been three cases of mucocutaneous relapse, and one case of possible and another of indubitable reinfection. There had been no case of serological relapse.

The results suggested that combined therapy with penicillin and arsenoxide, although not attaining complete efficiency, was an improvement on treatment by means of penicillin alone. Combined therapy, judging by early results, was probably in the same order of effectiveness as the "20-day" arsenoxide and bismuth treatment, and, if carried out in good circumstances, was almost without danger. For patients who had relapses after treatment with penicillin alone he now used 4,000,000 units penicillin and daily injections of 0.09 g. neohalarsine or 0.06 g. mapharside for ten days. The routine treatment in Army hospitals now consisted either of 2,400,000 units penicillin with ten daily injections of arsenoxide or of 4,000,000 units penicillin alone. One thousand cases were to be treated by each of these methods, and the results of a follow-up of such numbers should yield information of some value.

Turning to late syphilis, Col. Marshall said that osseocutaneous late syphilis of the acquired or congenital type reacted rapidly to penicillin in most cases. He had had good clinical results with gummata of the testicles. Interstitial keratitis reacted equivocally to penicillin as it did to other remedies. Penicillin given by parenteral injection in standard doses did not penetrate to the cerebrospinal fluid in demonstrable quantity, but, notwithstanding this, clinical effects were manifested. Clinical improvement had been reported in varying proportions of cases at all stages and in all types of neurosyphilis. His own observations in a small number of cases of neurosyphilis confirmed those of others that the larger the dose the better the result. He had treated neurosyphilis with two courses of penicillin, each of 2,400,000 units, at a week's interval, and had had good results. In the treatment of late syphilis of all types he now began with a course of 4,000,000 units penicillin in one hundred injections of 40,000 units extending over twelve and a half days. This might be varied a little at the start by a reduction in individual doses if therapeutic shock was to be feared. After this he gave a treatment of consolidation with bismuth or with bismuth and an arsenical, depending on the type of case and lasting at least six months.

In conclusion he said that they all agreed that some comparatively rapid method of treatment was necessary to combat the lack of enthusiasm of the patient for repeated visits to hospital. Whether this could be found in penicillin alone in single or repeated courses or in some method of combined therapy was a problem which, he feared, would not be settled for some time to come.

Dr. F. R. SELBIE who had advised Col. Marshall on the scheme for combined treatment with penicillin and arsenoxide, and to whose co-operation Col. Marshall had paid tribute, followed with some description of the experiments which had been undertaken with a view to the combination of these two therapies. The experiments had shown, he said, that penicillin had an immediate and dramatic effect which was quite comparable with that produced by means of arsenical drugs. They pointed to the conclusion, however, that penicillin ought to be supplemented by some other form of treatment such as arsenical drugs and bismuth. He thought that the least one ought to give was about two-thirds or one-half of the usual dose of the arsenical when combined with penicillin.

Proportion of Treatment Failures

Dr. A. J. KING said that penicillin was introduced as a routine treatment for early syphilis in the United States Army in June, 1944, and in the British Army in October, 1944. The remedy was untried, and to use it as a routine under the conditions then prevailing was something of a gamble. Whether the risk was justified awaited the test of time, but the immediate success of so short and safe a treatment exceeded the expectations of all but the most sanguine. At the same time the conditions were laid down for a large and important experiment in which many hundreds of patients were treated with standard doses of a new remedy, while the facilities for following up were such as would never be available in civil life. His own observation of the proportion of treatment failures after six months was very similar to that mentioned by Col. Marshall. In 105 cases there were 15% of failures, of which 13% were clinical relapses. So far as the evidence went—and it did not go very far as yet—it appeared that the anticipated results from penicillin therapy were not far short of those obtained with the standard method. Clearly, however, the comparison was speculative and scarcely to be justified by the present state of knowledge. A vast amount of information must now be available in the War Office, and it was disappointing that the cases cited amounted to no more than 270. It seemed to him that there was a good case for setting up an organization which would follow these men into civil life and do everything possible by co-operation with the public clinics to obtain information as to their clinical conditions during the next three years. Col. Marshall, who had done well to initiate experiments which would help to lower the incidence of relapsing infection, had no deaths in the 360 cases he had treated, and from this experience there were certain aspects of the value of penicillin which it was legitimate to stress even at this stage. One of these was the importance of such a therapeutic measure for uncooperative patients in civil life. The view had been expressed that the majority of early syphilitics would get well with a treatment generally regarded as inadequate, but there would be a proportion whom it would be difficult to get well even with a full and adequate treatment. It might be that when the optimum dosage of penicillin was known this problem would solve itself. The antispirochaetal effect of penicillin was not in doubt, but its ultimate value in the treatment of syphilis was very far from having been assessed. Such an assessment was dependent on lapse of time and procedure of investigation. The urgent need was to assess by means of a follow-up the large number of cases which had been treated during the last eighteen months.

Controlled Investigations Needed

Brig. T. E. OSMOND said that he remembered well the enthusiasm with which "606" was hailed when it came in, but, after the apparent cures, relapses began to occur. It seemed to him that penicillin was in many ways comparable with arsenic. Inadequate treatment was liable to be followed by relapses. The tendency had been to increase the amounts of penicillin, and he believed this would and should continue. It might be that they ought to use ten times as much as they had been doing. He attended an Anglo-American conference in Paris last year, at which the results reported from the British Army were not nearly as good as those from the American; there was no explanation why this should be so. Penicillin should be supplemented by both bismuth and arsenic, and increasing amounts of all three drugs were required as the age of infection increased. It had always been difficult to distinguish between relapse and reinfection, and he had been very sceptical of the latter. He thought that all cases should be labelled relapses, otherwise there was danger of overestimating the effectiveness of the treatment. He pleaded for the setting up of a central institute to guide and overlook all tests, especially tests in public laboratories. Penicillin in any reasonable dosage would kill off 99% of the spirochaetes, but something was needed to deal with the other 1%. No doubt penicillin was a more effective remedy than any of the arsenicals, but it would be many years before it was known how effective it was, and whether its use was likely to be followed by later manifestations, cardiovascular or neurological. They had a wonderful remedy in their hands, but they needed a series of controlled investigations.

Surg. Capt. LLOYD-JONES described the follow-up of an investigation concerning 223 cases of primary and 72 of secondary syphilis, all of them diagnosed by the finding of the spirochaete, and treated with penicillin. There had apparently been 18 relapses over a varying number of months. With the dose now considered minimum—namely, in primary cases 13 daily injections of 300,000 units or 8 of 500,000 units, and in secondary cases 16 daily injections of 300,000 units or 10 of 500,000—there had been no relapse to date.

Congenital Syphilis

Dr. GLADYS SANDES spoke of the treatment of congenital syphilitic children with penicillin. In the florid type of infection,

in which there was a high mortality, there had undoubtedly been an improvement since penicillin was introduced. It had been found better, however, to give some arsenic preparation first, and then after a fortnight to go on with penicillin, the reason being that when penicillin was first given the children tended to get a severe catarrhal reaction, almost suffocating in their own secretions. The dosage had never been less than 20,000 units three-hourly, leaving out one administration at night, and this was carried on for five days; a few had been treated with 40,000 units and the result had been apparently just the same. None of the children were over 5 years of age. The results of treatment in cases with bone disease had also been impressive. They responded extremely well and cleared up more efficiently than under almost any other treatment.

Col. L. W. HARRISON described an investigation concerning the effect of suspensions of penicillin in oil and beeswax. What he had to say was rather tentative and indeed in the nature of a progress report. Beeswax had been tried in various proportions, but he had come to the conclusion that 3.5% was the best. The concentration of penicillin in the blood serum and in the urine was measured after a certain number of hours. He added that he hoped soon to have at his disposal a supply of penicillin purer than any previously obtainable and that such purer supplies would be generally available.

CLINICAL PATHOLOGY

The annual general meeting of the European Association of Clinical Pathologists was held on Jan. 12 at the Glaxo Laboratories, Greenford, Middlesex. Three contributions sent by Dr. F. RAPPAPORT from Tel Aviv were read by Prof. F. Silberstein.

The first, on improvements of the technique of blood cultures, advised the use of a culture medium consisting of 90% fresh-water-fish infusion and 10% digest broth; the addition of small amounts of beef-liver, beef-brain, egg-yolk, starch, glucose, liquoid, and *p*-aminobenzoic acid made the medium suitable even for the most exacting bacteria. The medium was kept under partial vacuum in an atmosphere of air containing 10% CO_2. The fresh-water-fish medium contained proteins not susceptible of coagulation by heat. A new method of skin disinfection and the use of a selective medium prepared by adding small amounts of gentian violet (between 10^{-5} and 10^{-6}) to the basic medium described above enabled Rappaport to use capillary blood for culture.

In the second contribution, on collection of blood for examination of organisms of the enteric group, Rappaport recommended that blood should be taken into sterile throat swab tubes so that the clot formed and retracted around the swab; the clot could then be transferred with the minimum of interference into a tube of the same size containing a 3% glucose-bile culture medium. In the presence of glucose ferment a coarse precipitate was formed; absence of such a precipitate after 24 hours' incubation excluded the presence of organisms of the enteric group. The serum remaining in the original tube was used for routine agglutination.

The third contribution suggested technical improvements on the concentration and culture of tubercle bacilli; it advocated the use of both acid and alkaline digesting solutions and neutralization with the appropriate respective solution in the presence of methyl red and thymol blue as indicators. The acid solution consisted of equal amounts of concentrated sulphuric and phosphoric acid; the presence of the latter had a buffer effect in the process of neutralization.

Mr. W. B. EMERY spoke of the preparation and purification of liver extracts, showing the satisfactory results obtained in initial treatment of cases of pernicious anaemia by the injection of highly purified extracts containing in some instances as little as 1 to 3 mg. of solids. He recommended that a standard unitage be introduced in this country similar to that used in Canada and the U.S.A. Mr. J. T. MARSH showed various penicillin preparations and appliances developed in the last months. Prof. S. JELLINEK showed photographs and drawings from specimens of lesions produced by electricity.

Dr. G. UNGAR summarized the results of his experiments on the significance of bleeding time, and reported the isolation from the spleen of a substance which greatly reduces the bleeding time and is liberated after injury into the blood stream by means of hormonal influences.

Dr. H. S. BAAR (in collaboration with Prof. L. G. Parsons) presented clinical and pathological details of four cases of infantile encephalitis; from each of these a virus was isolated which when transmitted to laboratory animals produced an infection closely resembling toxoplasmosis both macroscopically and serologically. Extensive search of the infective material, body fluids, and pathological specimens had failed, however, to demonstrate typical toxoplasma organisms. He also showed three cases of pituitary cachexia in childhood; two of these were due to large colloidal cysts.

Dr. G. E. WACHTEL produced evidence that the intravenous injection of homologous and heterologous seminal fluid induces hypertrophy of the uterus in spayed and half-spayed immature female rabbits. A gonadotrophic effect on the ovaries had also been noticed; it remains to be shown whether this is a direct effect on the ovary or is brought about via the hypophysis.

Dr. S. SEVITT showed an improved instrument for liver biopsy, with which suction through a syringe can be applied concurrently with the introduction of the needle into the liver.

GAS-AND-AIR ANALGESIA BY MIDWIVES

At a meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland on Jan. 25 Dr. NINIAN FALKINER (chairman, Central Midwives Board, Eire) opened a discussion on "Proposed Compulsory Training of Midwives in the Administration of Nitrous-oxide-and-air-Analgesia."

Dr. Falkiner said that the Central Midwives Board in Ireland had recommended that new rules should be adopted making it compulsory for student midwives to receive training in the administration of nitrous-oxide-and-air analgesia. The Central Midwives Board in England had already approved these rules. Any midwife qualifying in England after July 1 this year would come under the amendment of Rule 42. As reciprocal agreements existed between the Central Midwives Boards, it was usual for the rules and training in Eire to keep in line with the rules and training of the English Board.

Dr. E. A. KEELAN (the president) considered that if the gas-air machines were used casually they would not always be successful. He recommended that nurses and midwives should receive special training in their use; this could be done in a series of lectures given by anesthetists.

Prof. O'DONEL BROWNE said he was altogether in favour of the proposal. The training should be given by anaesthetists attached to hospitals, and not by other midwives or doctors. He had used the gas-air apparatus himself when it was first introduced, and he stressed the importance of giving it in time to the patient. He doubted if the percentage of gas and air (45%) given by this machine provided enough analgesia, and asked if there could not be a machine which would give greater relief from pain. Finally he pointed out that, as nurses were good at giving chloroform, he did not see why they could not be just as efficient in the administration of gas-air analgesia.

Dr. BETHEL SOLOMONS was all in favour of midwives being allowed to give analgesia if it could be done without danger to the patient. If there was any danger at all, the law would have to be changed so that midwives could issue death certificates. In the Dublin Maternity Hospitals it would be necessary to appoint a full-time anaesthetist.

Dr. R. W. SHAW agreed with Prof. O'Donel Browne that the presence of an anaesthetist in any obstetrical operation was a necessity, but he thought it would be difficult to obtain the services of an anaesthetist throughout all the stages of labour, especially in a primipara. There were objections to chloroform being given by nurses; would gas-air be any safer or more efficient, and would the nurses and midwives be able to use it proficiently?

Costs and Quantities

Dr. ALEX SPAIN said that they used gas-air analgesia very extensively in the National Maternity Hospital. The cost was considerable; in one year they had paid £625 for gas alone for the labour ward, and a trained anaesthetist would be an additional expense. In 1942 they used 22,600 gallons of nitrous oxide, and this figure rose to 188,400 gallons in 1945. He pointed out that the training was not difficult and there was no danger. Over a period of three years in the National Maternity Hospital gas-air analgesia had never caused them a moment's anxiety. The machine needed very little supervision and the patient could easily learn to use it. He agreed that 45% nitrous oxide was not sufficient to relieve pain; they used machines which gave a little over 60% and they were very satisfactory. He recommended the use of chloral hydrate and bromide during early labour, and thought that midwives were entitled to use it.

Prof. J. F. CUNNINGHAM said that it would be ideal always to employ an anaesthetist to give gas and oxygen, but expense and the time factor had to be considered. Chloroform still held its place and would continue to do so, especially in domiciliary and country practice, until something safer was found to replace it. He did not think that it was safe for nurses to use it without a doctor being present, and if they were going to be trained how to use the gas–air machine they should also be trained how to administer chloroform.

Dr. ALAN THOMPSON said that the gas–air machine might be awkward and had many drawbacks, but one advantage was that it could be used intermittently over a period of several hours. This could not be done with chloroform or the barbiturates.

Dr. J. A. D. DEENY (Chief Medical Adviser to the Department of Local Government and Public Health) told the Section that Dr. Ward (Parliamentary Secretary to the Minister for Local Government and Public Health) was prepared to approve of compulsory training of midwives in gas–air analgesia, but that he was inclined to proceed cautiously in the use of this apparatus as he did not think the average midwife in Eire would be very efficient in its use. Newly qualified midwives could be trained to use gas and air, but it would not be easy to train the older midwives.

Dr. FLORENCE MCCLELLAND said she had received the early part of her training with Dr. Minnitt, who invented the machine for gas–air administration. She was disappointed with the machine on the whole, but thought it might be helpful in isolated cases, such as primigravidae with a long first stage of labour. The patient should be trained to use it during her antenatal period; only the patients trained in its use got benefit from it. The 45% mixture was much too weak to relieve severe pain. She did not recommend giving 60% over a prolonged period, as in a trial of labour or where there was any difficulty. This apparatus was not the real answer for universal relief of pain, although it was very useful. In her practice she used cyclopropane almost invariably for normal or forceps delivery. She condemned the use of chloroform, either intermittently or even for a short anaesthesia for delivery, as she had seen acute atrophy following chloroform administration. It might be safe in 99% of cases, but one did come across a patient quite intolerant to the drug. There was no means of knowing what the state of a patient's liver was, and one was not justified in using such a toxic drug. She recommended the use of ether when nothing else was available.

Dr. T. J. GILMARTIN quoted Guedel, who introduced nitrous oxide analgesia in America in 1911, as saying: "There is no more dangerous application of nitrous oxide than its use in obstetrics by the inexperienced. . . ." Claims for success with this technique varied, and he was not satisfied from his own experience that it afforded complete analgesia. It was, however, a step in the right direction towards analgesia and away from amnesics like nembutal. He concluded the discussion by saying that everybody agreed that the Central Midwives Board was justified in bringing this proposal into operation, and that the training schools had adequate provision for dealing with the matter. The necessary apparatus should be obtained, and salaries should be found for those skilled people who would have the responsibility of training the midwives and nurses in the administration of gas–air analgesia.

STATISTICAL STUDY OF INFECTIOUS DISEASES

In a paper read before the Royal Statistical Society on Feb. 27 Prof. MAJOR GREENWOOD pointed out that, although all civilized persons now recognize that infection is a biological process, even as recently as a century ago very intelligent observers thought that epidemics might be due to "atmospherics" or miasmatic factors and that influenza was not an infectious disease at all.

Judgment whether a disease were or were not infectious or contagious was based upon statistical reasoning. Even now statistical arguments were of great importance because there might be difference of opinion as to the vehicles of infection—for instance, whether droplet infection or contamination of water or food or conveyance by biting insects played the principal part. Epidemic poliomyelitis was a case in point. Prof. Greenwood described various statistical methods in use, in particular the study of the time interval between successive cases in families, and suggested that more work should be done on sets of cases. He then turned to the quest for a "law" of epidemics. The continued existence of mankind proved that epidemics did come to an end, and various medical statisticians had attempted to discover why. One of the first was William Farr, who suggested as a possible "law" the so-called normal curve, but subsequently proposed a rather more complex form by the use of which he predicted—with fair success—the way in which a terrible outbreak of cattle plague would decline several weeks before it did decline.

In more recent times Ronald Ross and John Brownlee devoted much mathematical ingenuity to the elucidation of epidemic forms, while the late Prof. W. W. C. Topley, in collaboration with Prof. Greenwood and others, spent many years on the study of epidemics artificially provoked in herds of mice. Brownlee was of the opinion that epidemics did not usually come to an end because all those exposed to risk and capable of being infected had been infected, but because from the very beginning of the epidemic the infective power of the organism waned. Prof. Greenwood pointed out that there was experimental evidence that this apparently paradoxical hypothesis might be true, but not enough to permit one to regard it as a general explanation. He suggested that the whole subject needed the attention of young mathematical statisticians, because the analytical difficulties of the problem were great.

RADIOLOGY OF THE CHEST

At a meeting of the Manchester Medical Society on Feb. 6 Dr. E. D. GRAY read a paper on "The Present Position of Radiology of the Chest."

He reviewed the various methods used in *x*-ray examination of the chest, and emphasized the importance of preliminary screen examination; there was a tendency nowadays to rely exclusively on films. Apart from the additional information obtained by fluoroscopy, it was possible during this examination to plan the subsequent radiographic procedures to the best advantage—a method of much more value than the routine exposure of multiple films without previous investigation under the fluorescent screen.

The importance of the antero-posterior chest radiograph as an adjunct to the standard postero-anterior was stressed, especially in the demonstration of small, posteriorly situated lesions, which in the one view might be obscured by superimposed shadows of the bony thorax. The principles underlying the use of tomography, bronchography, and screen photography were briefly described. Illustrations were given of a number of pitfalls, most of which could readily be avoided if the observer were familiar with the technical and physical principles of chest radiology. Mention was made of the help afforded by radiology in the study of the anatomy of the lungs, notably of the bronchial tree, the interlobar fissures, and, more recently, the pulmonary vascular supply.

If an experienced observer could say in any particular case that no abnormality had been detected, this negative finding could generally be relied on in the exclusion of many of the important intrathoracic lesions. If clinical suspicion continued, however, there should be no hesitation in repeating the *x*-ray examination after an interval; in some conditions there was a latent period before the radiological signs became evident. The interpretation of positive radiological findings was not so simple. Occasionally the *x*-ray appearances were characteristic enough to lead directly to the diagnosis; more often they had to be correlated with the clinical findings. Some cases were so obscure, both clinically and radiologically, that it might be impossible to arrive at a diagnosis from a single examination, and help must be sought from serial radiographs taken at suitable intervals.

In the subsequent discussion Dr. R. ELLIS referred to the work of previous Manchester radiologists, such as Barclay, Paterson and Twining, and to the great value of good co-operation between physician and radiologist. Dr. JESSEL pleaded for a more careful clinical examination and history-taking in cases of early phthisis. In answer to a question by Dr. LUXTON about iodized oil, Dr. Gray said that it should be avoided if at all possible until all other methods of examination, including bronchoscopy, had been tried.

Correspondence

National Research in Tuberculosis

SIR,—The letter of Dr. George Luntz (Dec. 1, 1945, p. 781) raises a matter of national importance. Tuberculosis costs the country many millions of pounds every year and destroys or cripples thousands of persons in the prime of life, and yet our efforts to combat the ravages of this scourge are still spasmodic and half-hearted. This is not due to any lack of enthusiasm on the part of those who devote their whole lives to the prevention and treatment of the disease. One has only to attend a few meetings of the Tuberculosis Association to realize the keenness of its members, the interest which they take in new methods of treatment, and their readiness to assist sufferers from this disability in every possible way. But progress in the past has been very largely due to individual effort struggling against the complacency and ignorance of both patients and the general public. The Joint Tuberculosis Council is a body composed of some of the leading authorities on tuberculosis in the country, but it lacks the necessary financial backing to provide its efforts with the success they deserve, and its excellent reports and memoranda waste "their sweetness on the desert air." The National Association for the Prevention of Tuberculosis has made heroic efforts for the last forty-five years to rouse the nation to realize its responsibilities with regard to the prevention of this disease. Yet, in spite of all this good work, which is almost entirely voluntary, we are still unable to prevent persons becoming tuberculous or to offer them a cure, and the infection continues to take its toll of children and young adults as it passes through the population practically unchecked.

Our knowledge of the pathogenesis of the disease is very incomplete and any attempts at prognosis are always uncertain and often fallacious. This unsatisfactory position is mainly due to lack of organized research, as regards both prevention and treatment, and the time is ripe for money and labour to be devoted to this purpose so that a concerted effort may be made to reduce this national liability. The experience and advice of the three bodies I have mentioned could be taken to assist an appointed team of experts to devise and put into execution programmes of research in tuberculosis, adequately backed by the necessary financial support from Government funds, whereby it should be possible to discover the cure and determine the best methods for the prevention of the spread of the disease.

Those responsible for the treatment of tuberculosis would be only too anxious to adopt new methods which are recommended by a competent research organization. In fact, in many sanatoria under local authorities a considerable amount of research work is already performed, but it is at present individualistic and tends to run along separate channels which flow independent of each other. There is need for collaboration in this work, so that the various efforts may support each other in a united one to discover a cure for the disease.—I am, etc.,

Berkhamsted. FREDERICK HEAF.

Tuberculosis in Childhood

SIR,—As a tuberculosis officer I read with interest Dr. P. W. Roe's letter (Feb. 16, p. 256). I should like, however, to dispute his statement that nobody cares for the children running about the house of a tuberculous adult. It is the duty of the health visitor to warn the parents of the danger to the children, and to require them to bring the children to the dispensary to see the doctor. It is then my practice to do a Mantoux test, to *x*-ray all with a positive reaction, and to observe all cases, negative and positive, so long as they are still in contact with the tuberculous case. Sometimes, of course, the parents pay no heed to what the health visitor says, and I am sure I would be very glad if the general practitioner would reinforce her remarks, to see that these children are properly investigated at the dispensary. Though the G.P. may not be able to order an *x*-ray examination, he can still send these children to the T.O., who can do so.

Furthermore, though I have always been a keen advocate of health centres and a salaried State medical service, I do not think that any useful purpose will be served by equipping health centres with an *x*-ray plant, even with a skilled radiographer. I know very few G.P.s who are able to make an intelligent reading of a chest film to-day, and though they might acquire that skill no doubt, I see no reason why they should trouble when there is already a fully equipped public health service ready and eager to do this work.

I agree, however, that it is almost impossible at the present time to do more than just follow up these cases. Unless there is something definitely pathological we cannot send them to a sanatorium. Contact may be broken by removing the adult to a sanatorium, but the chronic case is often still positive when he returns. We urgently require country "preventoria," to which we might send the child contacts for periodic holidays to stimulate their resistance. These would also be of tremendous help in the family where the mother is the tuberculous patient, as cases arise in which sanatorium treatment has to be refused or drastically curtailed because there is no one to look after the children and nowhere to send them.—I am, etc.,

Bishop Auckland. WILLIAM D. GRAY.

Lay versus Medical Administration

SIR,—The question put by Sir Frederick Menzies (Feb. 16, p. 251) on this vital point is both timely and necessary. In the next few months a decision will be made for good or ill which will have profound influence on the future of medicine. "Is the chief officer of the administrative unit—regional, divisional, or whatever it may be—to be a layman or a medical man?" It is very proper to have a layman as Minister of Health, and it is democratic and wise that under the Minister in the various regions there shall be committees of weighty lay composition, but who is going to direct the very considerable administrative machine which will be necessary both to advise the committee and to carry out its decisions? The personnel will be numerous; there will be many laymen and a few doctors. At the higher levels both professional and non-professional officers will have important functions and a degree of parallel organization may be desirable; but there can be only one head. If this is a layman it is unlikely that he will fully understand and be sympathetic towards the many medical problems that will beset his department. The prominent idea that the layman has some mysterious inherent quality for administration that is withheld from a man who has studied his subject and qualified in it is absurd. It would be equally idle to pretend that every doctor was, *ipso facto*, a capable administrator, but a good medical background is surely not a bad foundation on which to build experience in the administration of a large medical organization.

Some clinicians fondly believe that with medical advisory committees they can do without doctors at head offices. The lay secretary at their hospital has never got in their way. He always does what he is told, and so they think they will similarly "manage" the lay administrators in a new health service. What a cardinal error! Let there be no mistake about this. Advisory committees cannot be given executive functions. Organization there must be and chief officers with considerable powers. We should do everything possible to see that such officers have the necessary medical background and combine the scientific outlook with a practical experience of administration.—I am, etc.,

London, N.W.11. F. J. BENTLEY.

SIR,—Sir Frederick Menzies expresses the hope that the Minister of Health will appoint medical men as the chief administrative officers of regional organizations in the new health services. He might have gone further and insisted that medical men selected for such positions should be chosen only from among those who have had wide and successful experience of the administration of medical services. A medical qualification alone is no guarantee of ability to perform administrative functions. The medical administrator is just as much a specialist in his own line as are those who identify themselves with various types of clinical work. Sir Frederick Menzies, I am sure, could suggest where such men are to be found; and so could I, Mr. Editor, but after reading your unpleasant attack (with its sneering headline) upon the county medical officer for Essex (Feb. 16, p. 241), I feel that you would not approve my suggestion.—I am, etc.,

Nottingham. CYRIL BANKS.

Physical Therapy in Mental Disorder

SIR,—Those who have been practising psychiatry during the past twenty years cannot help having noticed one significant fact with regard to nearly each one of the newly introduced physical treatments of mental disorder. At first it is tried in the most hopeless varieties of mental illness—e.g., chronic schizophrenia. The results prove disappointing. It is then tried in schizophrenia of recent duration; the results continue to be disappointing. The treatment is then transferred to the less malignant forms of mental illness—e.g., the manic-depressive group, or at least schizophrenia with a cyclothymic colouring; a psychotic episode is thus made to clear up more rapidly, but recurrence is not prevented. Finally the neuroses—the milder worries and depressions of life—are attacked, and good recoveries are frequently obtained. A wag has remarked that E.C.T. produces the best results in schizophrenia when the illness is at such an early stage that a diagnosis cannot be made.

The sequence of events noted above has happened with cardiazol, E.C.T., and insulin, and is now happening with leucotomy. Among the ultra-enthusiasts are those who consider that leucotomy should be performed in the earliest stages of mental illness, even where no other forms of treatment have been attempted. Dr. G. W. T. H. Fleming complacently envisages an era when one will hurry to leucotomize a patient aged 60 who has developed a sudden depression with suicidal behaviour (*J. ment. Sci.*, April, 1942, p. 282). One can guarantee that under such circumstances there will be a favourable "recovery" rate, for does not every medical officer of a mental hospital well know that at least 80% of his recoveries (in the major psychoses) occur within the first year of admission anyway, leucotomy or not? But this operation destroys all the finer feelings and emotions, eradicates all the original and creative faculties. Many psychiatrists, like myself, believe that it is worth while to suffer a depression a little longer and obtain a real cure, a restitution to normality, rather than rapidly attain a facile, emotional dementia.

Permit me, Sir, to observe that the greatest advance in the last fifty years in relieving the sufferings of mentally sick people has been the practical application of the researches of Pavlov, Freud, Jung, Adler, and Stekel. Why then is there such a concentration on the physical modes of treatment, with the inevitable neglect of psychotherapy, for there are nowhere near enough psychiatrists available for the pressing needs of the population? One answer lies in the more dramatic and shop-window aspects of the former, especially so far as laymen are concerned. The ordinary public (I have read newspaper reports by journalists who have been invited to watch the fun) can readily appreciate the hum of an electric machine with all its dials and gadgets, or the splendid view of a large, well-fitted operating theatre, complete with shining surgical instruments; but what can the psychotherapist exhibit except an armchair, a couch, and perhaps a syringe filled with evipan or pentothal? There is just no comparison from the advertisement point of view.

And there is another reason why pushing a button is more popular than intense psychotherapy. Anyone can quickly learn the technique of E.C.T., but efficient psychotherapy requires many years of experience, and we are short of well-trained personnel. Very few of us get anywhere near Prof. Jung's ideal—a doctor of wide culture, who has travelled far and experienced much himself in suffering and happiness, who is well read in all the leading schools of psychology, philosophy, and religion, who possesses natural sympathy, patience, and kindness, and who has a keen desire to understand the sufferings of others. Those of us who are enthusiastic earnestly try to live up to such an ideal, but it is very time-consuming, and the work is exhausting. Yes, I must admit, pressing a button is much easier, and a more readily available capacity.

One argument given for intense physical treatment is that in the more malignant psychoses "we must do something." But there is no virtue in furious activity unless this is impelled in a scientific manner. Why must such an attitude be adopted in psychiatry, when the same policy is not followed in other branches of medicine? General physicians cannot "cure" rheumatic valvular disease or hypertension, neurologists cannot cure disseminated sclerosis or the muscular dystrophies, but they do not rush indiscriminately to shock treatments; they seem to be content to admit honestly that in the present state of knowledge only palliative treatment is available, and that we must hopefully await the results of research. And this impels me to draw attention to a great failing in the organization of psychiatry in this country. The Mental Treatment Act of 1930 (Section 6) gave every local authority the power to expend money on research. How many local authorities have taken advantage of this, and to what extent? But without organized research psychiatry will not progress with any great rapidity. To convulse or to leucotomize hundreds of patients on a conveyer-belt principle in order to be able to boast of astronomical figures to some lay committee is not scientific research.

Finally, I wish to make it clear that, unlike Dr. D. W. Winnicott, I am not opposed to experimental procedures on physical lines in any of the more malignant psychoses, but I strongly object to E.C.T. and leucotomy being used in a non-scientific and indiscriminately wholesale manner.—I am, etc.,

Park Prewett Hospital, Basingstoke. I. ATKIN.

SIR,—Dr. Winnicott informs me privately that I am mistaken in suggesting that he does not approve of other than psychotherapy in mental illnesses. I am sorry if I have done him an injustice. It seems that our points of view are not so separate as at first appeared. He disapproves of electric convulsive therapy and leucotomy in any case; I feel that they should be used only in selected cases and deprecate their abuse.

It seems a great pity that no indications, no definite canons regarding the application of these treatments have been formulated. It might be suggested that something like the following would be of use in indicating when these therapies were to be employed. Although they appear self-evident such criteria are frequently neglected and no harm can be caused by stating them. (1) Because they are drastic treatments with occasional serious consequences (fractured vertebrae in convulsions, death in insulin coma) convulsive and insulin therapy should be used only after a careful and complete physical and psychological examination has been performed, and after every effort, such as the correction of environmental stress, psychotherapy, and so on, has been made. (2) Because a certain percentage of schizophrenics recover spontaneously, and this usually occurs within two years of the onset of the disease; moreover, because leucotomy is a mutilating treatment, it is absolutely contra-indicated before this period. It is indicated afterwards only when everything else has been tried and failed. In the case of obsessionals a period of five years should be substituted because this illness has less severe social consequences and the patient is more likely to recover spontaneously or with lesser forms of treatment.

In my opinion anyone who rushes in to apply mutilating operations such as leucotomy without using criteria such as those suggested above should lay himself open to an action for maiming, and sooner or later I am sure that this will happen with serious consequences to the operator and his advisers.—I am, etc.,

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SIR,—In the debate on this subject there is evidence of some confused thinking. That treatment is at times given unnecessarily, unskilfully, or even with a lack of humanity, may be a criticism of the exponents but not of the methods themselves. It is, however, to be deplored when argument is perverted into personal attack. The reflections on the character of Dr. Jan Frank, made by one of your correspondents in the issue of Feb. 16, are as unjust as they are irrelevant. We had the chance of working with him at Graylingwell Hospital. Because he is a trained psycho-analyst who uses physical treatment to help those beyond other means of relief, we learned much from him of the way humanity and individual insight should guide the doctor in his approach to the patient.—We are, etc.,

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Maudsley Hospital, S.E.5. WILLIAM SARGANT.

SIR,—Medical officers who, strange to relate, do for the most part know what they are about will have attended with interest to the counsel of the few that have written with knowledge and authority; they will have been wearied by the quite remarkable fatuity of those who have gone to such trouble and length to

display neither. Without demur—at least, without much—we have seen ourselves described as dishonest, brutal, and feeble-minded. But against the rank bad taste of Dr. C. G. Learoyd (who, for some reason, thinks it necessary to emphasize that he is not a psychiatrist) and his contemptible innuendoes associating the views of Dr. Jan Frank with the methods of "Hitlerite Germany," I know that I am not alone in wishing to protest. I am only surprised that you, Sir, have thought fit to print them. —I am, etc.,

Exeter. JOHN A. AINSLIE.

Stethoscope versus X Rays

SIR,—It has been stated that the discussion at the Royal Society of Medicine under this heading "showed a remarkable unanimity between physicians and radiologists" (*Lancet*, 1945, **2**, 784). The correspondence in your columns, I am pleased to note, can hardly be said to have done the same.

As a radiologist who has been dubbed (*Post-grad. med. J.*, 1944, **20**, 135) to have "an unhappy aversion to mass radiography" and one who clings "to the traditional gibe of the old school of wooden stethoscopes" and "whose experience apparently differs from the rest of the civilized world," I regret to note, with your correspondent David W. Tough (Feb. 16, p. 254), that there are so many so-called chest specialists who can find unanimity or satisfaction in deriding the value of one sense in favour of another. He and your correspondents R. C. Hutchinson (Jan. 5, p. 31) and E. Weatherhead (Jan. 19, p. 103) have rightly stressed the fact that we have five senses and that the use of every one is essential in diagnosis, for any one may give a clue when all the others fail. The radiograph, good though it may be, is merely one of the aids to vision; and though to the novice and the careless clinician or radiologist its spectacular appearances are overwhelming, this is merely because they have neglected to study the limitations and the best uses of radiology and to cultivate the other senses. They have failed to appreciate what I have described (*Proc. roy. Soc. Med.*, 1945, **38**, 555) as "the latent negative radiographic period" and "the positive radiographic symptomless period."

The adoption of radiology as the sole essential for the diagnosis of disease on the plea that progressive tuberculosis and other conditions are symptomless is leading to the serious neglect of the clinical history and other clinical methods. Diagnosis and treatment are being carried out without proper examination or attention to the patient. Consultations are held and decisions made between physician and surgeon, not on the patient but on the radiographs. True, the neglected symbol of clinical methods, the stethoscope, is prominently worn to denote the specialty. If there is any comment which ought to have been made under the heading "Stethoscope *versus X* Rays," it is that the stethoscope necessitates contact of the physician with the patient but *x* rays do not. The essential clinical evidence is either not sought or neglected because of the concern over the radiographic appearances; and, still more strange, while all this deference is paid to the radiography, the radiologist's opinion, the person who ought to be in the best position to co-operate and advise on radiographic appearances, is neglected and often studiously avoided. This neglect is often apparent to the experienced radiologist, for he is frequently able to get from the patient (the clinician's request in hospital does not supply it) evidence which helps him to interpret his radiographs. Surely the duty of the radiologist is to supply the clinician with all the evidence which radiology can offer; he cannot do this to the best interests of the patient unless the clinician has made an adequate examination and indicated his findings.

To-day the abuses of radiology—I have recorded the most prominent (*Brit. J. Radiol.*, 1945, **18**, 249)—are rampant, and unless checked will bring it into disrepute. It is this we have reason to fear. There is a growing tendency to read more into the radiograph than is justifiable, for we do not yet appreciate the extent of the variations of the normal. Unusual radiographic appearances in the symptomless patient tempt the inquisitive—the more the less his experience in radiology—to explore, with the production of symptoms to the disadvantage of the patient. Serial radiographic study by experienced observers is more instructive and less harmful if combined with intelligent clinical investigation.—I am, etc.,

Birmingham. JAMES F. BRAILSFORD.

SIR,—In view of the recent correspondence on this subject this case may be worth recording.

An old friend of mine, an auctioneer, consulted his doctor to find out why recently he felt so tired out in the evening. He confessed that he was increasing his allowance of whisky to overcome this feeling. His doctor could find nothing to account for his symptoms, and sent him to Harrogate for rest and change. He was put under the charge of a very competent practitioner in that town, who also could find no definite evidence of disease. He returned to work after six weeks, but at the end of a month he again consulted his doctor complaining of the same feeling of exhaustion after his day's work. His doctor then took him to London, where he was overhauled by two well-known consultant physicians. Again neither could find anything definite to account for his symptoms, but one suspected early malignant disease of the stomach and advised a barium meal to be done in London. My friend, however, insisted that I should do this examination in spite of the wish of the consultant.

I could find no *x*-ray evidence at all of mischief in the intestinal tract, and as I thought my verdict would not be accepted as I was unknown to either consultant, with the consent of his doctor I *x*-rayed his chest, though none of the four physicians who examined him suspected mischief there. The film revealed extensive tuberculous infiltration in both lungs. In fact there was very little lung tissue not involved. In the left middle zone there was a big cavity draining into a bronchus. His sputum was strongly positive. He lived six weeks only after the diagnosis of his condition was made. —I am, etc.,

Newton Abbot. W. H. STEELE.

Fractured Patella

SIR,—In an article entitled "Fractured Patella treated by Excision" Mr. R. Brooke (Feb. 16, p. 231) advocates this procedure for transverse as well as for comminuted injuries. The evidence in support of this recommendation does not seem to me to be convincing. In 35 cases followed up there were 19 examples of transverse fracture; 7 of these were left with some disability. Of 29 cases which he observed personally, 26 were found to have "no deformity." This is surprising as I do not remember seeing anyone who had lost a patella without observing some flattening of the knee when it was viewed in the semi-flexed position, and also appreciable reduction in the circumference of the thigh on the affected side.

It is common ground that excision of the patella breaks the continuity of the rectus tendon and the patellar ligament. This deficiency is not always made good by suture of the lateral expansions of the quadriceps. I have seen a good number of imperfect results. It may be that a final decision as to the merits of excision in the treatment of these injuries should be withheld till the late results of a comparable series of fractures competently sutured have been recorded. Meanwhile, I think that suture with multi-ply stainless steel wire is the method of choice.—I am, etc.,

Radcliffe Infirmary, Oxford. MAX PAGE.

Transmesenteric Hernia

SIR,—I was very interested to read Mr. Peter Martin's account (Feb. 16, p. 238) of his case of obstructive mesenteric hernia.

On Jan. 22 I operated on a patient who was suffering from strangulated transmesenteric hernia. There was a defect in the mesentery of about 1 foot (30 cm.) from the ileo-caecal junction, and the extraordinary feature was that the loop of bowel was strangulated on both sides of the mesenteric defect. The bowel had apparently passed from right to left, and of this 6 inches (15 cm.) had passed back again. The bowel was non-viable, and resection of the terminal 18 inches (45 cm.) of the ileum was performed and end-to-side anastomosis of the ileum to the caecum was effected. The margins of the opening in the mesentery, which were smooth and rounded, measured approximately 2 inches by 2 inches (5 cm. by 5 cm.).

The patient made an uninterrupted recovery and was discharged from hospital on Feb. 15.—I am, etc.,

Liverpool. JAMES MORONEY.

Nitrites in Coronary Occlusion

SIR,—Standard textbooks on medicine and cardiology invariably state that nitrites are contraindicated in the treatment of coronary artery thrombosis, as well as in the pain of "cardiac ischaemia" due to infarction of the myocardium.

Physical Therapy in Mental Disorder

SIR,—Those who have been practising psychiatry during the past twenty years cannot help having noticed one significant fact with regard to nearly each one of the newly introduced physical treatments of mental disorder. At first it is tried in the most hopeless varieties of mental illness—e.g., chronic schizophrenia. The results prove disappointing. It is then tried in schizophrenia of recent duration; the results continue to be disappointing. The treatment is then transferred to the less malignant forms of mental illness—e.g., the manic-depressive group, or at least schizophrenia with a cyclothymic colouring; a psychotic episode is thus made to clear up more rapidly, but recurrence is not prevented. Finally the neuroses—the milder worries and depressions of life—are attacked, and good recoveries are frequently obtained. A wag has remarked that E.C.T. produces the best results in schizophrenia when the illness is at such an early stage that a diagnosis cannot be made.

The sequence of events noted above has happened with cardiazol, E.C.T., and insulin, and is now happening with leucotomy. Among the ultra-enthusiasts are those who consider that leucotomy should be performed in the earliest stages of mental illness, even where no other forms of treatment have been attempted. Dr. G. W. T. H. Fleming complacently envisages an era when one will hurry to leucotomize a patient aged 60 who has developed a sudden depression with suicidal behaviour (*J. ment. Sci.*, April, 1942, p. 282). One can guarantee that under such circumstances there will be a favourable "recovery" rate, for does not every medical officer of a mental hospital well know that at least 80% of his recoveries (in the major psychoses) occur within the first year of admission anyway, leucotomy or not? But this operation destroys all the finer feelings and emotions, eradicates all the original and creative faculties. Many psychiatrists, like myself, believe that it is worth while to suffer a depression a little longer and obtain a real cure, a restitution to normality, rather than rapidly attain a facile, emotional dementia.

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SIR,—It has been stated that the discussion at the Royal Society of Medicine under this heading "showed a remarkable unanimity between physicians and radiologists" (*Lancet*, 1945, **2**, 784). The correspondence in your columns, I am pleased to note, can hardly be said to have done the same.

As a radiologist who has been dubbed (*Post-grad. med. J.*, 1944, **20**, 135) to have "an unhappy aversion to mass radiography" and one who clings "to the traditional gibe of the old school of wooden stethoscopes" and "whose experience apparently differs from the rest of the civilized world," I regret to note, with your correspondent David W. Tough (Feb. 16, p. 254), that there are so many so-called chest specialists who can find unanimity or satisfaction in deriding the value of one sense in favour of another. He and your correspondents R. C. Hutchinson (Jan. 5, p. 31) and E. Weatherhead (Jan. 19, p. 103) have rightly stressed the fact that we have five senses and that the use of every one is essential in diagnosis, for any one may give a clue when all the others fail. The radiograph, good though it may be, is merely one of the aids to vision; and though to the novice and the careless clinician or radiologist its spectacular appearances are overwhelming, this is merely because they have neglected to study the limitations and the best uses of radiology and to cultivate the other senses. They have failed to appreciate what I have described (*Proc. roy. Soc. Med.*, 1945, **38**, 555) as "the latent negative radiographic period" and "the positive radiographic symptomless period."

The adoption of radiology as the sole essential for the diagnosis of disease on the plea that progressive tuberculosis and other conditions are symptomless is leading to the serious neglect of the clinical history and other clinical methods. Diagnosis and treatment are being carried out without proper examination or attention to the patient. Consultations are held and decisions made between physician and surgeon, not on the patient but on the radiographs. True, the neglected symbol of clinical methods, the stethoscope, is prominently worn to denote the specialty. If there is any comment which ought to have been made under the heading "Stethoscope *versus X* Rays," it is that the stethoscope necessitates contact of the physician with the patient but *x* rays do not. The essential clinical evidence is either not sought or neglected because of the concern over the radiographic appearances; and, still more strange, while all this deference is paid to the radiography, the radiologist's opinion, the person who ought to be in the best position to co-operate and advise on radiographic appearances, is neglected and often studiously avoided. This neglect is often apparent to the experienced radiologist, for he is frequently able to get from the patient (the clinician's request in hospital does not supply it) evidence which helps him to interpret his radiographs. Surely the duty of the radiologist is to supply the clinician with all the evidence which radiology can offer; he cannot do this to the best interests of the patient unless the clinician has made an adequate examination and indicated his findings.

To-day the abuses of radiology—I have recorded the most prominent (*Brit. J. Radiol.*, 1945, **18**, 249)—are rampant, and unless checked will bring it into disrepute. It is this we have reason to fear. There is a growing tendency to read more into the radiograph than is justifiable, for we do not yet appreciate the extent of the variations of the normal. Unusual radiographic appearances in the symptomless patient tempt the inquisitive—the more the less his experience in radiology—to explore, with the production of symptoms to the disadvantage of the patient. Serial radiographic study by experienced observers is more instructive and less harmful if combined with intelligent clinical investigation.—I am, etc.,

Birmingham. JAMES F. BRAILSFORD.

SIR,—In view of the recent correspondence on this subject this case may be worth recording.

An old friend of mine, an auctioneer, consulted his doctor to find out why recently he felt so tired out in the evening. He confessed that he was increasing his allowance of whisky to overcome this feeling. His doctor could find nothing to account for his symptoms, and sent him to Harrogate for rest and change. He was put under the charge of a very competent practitioner in that town, who also could find no definite evidence of disease. He returned to work after six weeks, but at the end of a month he again consulted his doctor complaining of the same feeling of exhaustion after his day's work. His doctor then took him to London, where he was overhauled by two well-known consultant physicians. Again neither could find anything definite to account for his symptoms, but one suspected early malignant disease of the stomach and advised a barium meal to be done in London. My friend, however, insisted that I should do this examination in spite of the wish of the consultant.

I could find no *x*-ray evidence at all of mischief in the intestinal tract, and as I thought my verdict would not be accepted as I was unknown to either consultant, with the consent of his doctor I *x*-rayed his chest, though none of the four physicians who examined him suspected mischief there. The film revealed extensive tuberculous infiltration in both lungs. In fact there was very little lung tissue not involved. In the left middle zone there was a big cavity draining into a bronchus. His sputum was strongly positive. He lived six weeks only after the diagnosis of his condition was made. —I am, etc.,

Newton Abbot. W. H. STEELE.

Fractured Patella

SIR,—In an article entitled "Fractured Patella treated by Excision" Mr. R. Brooke (Feb. 16, p. 231) advocates this procedure for transverse as well as for comminuted injuries. The evidence in support of this recommendation does not seem to me to be convincing. In 35 cases followed up there were 19 examples of transverse fracture; 7 of these were left with some disability. Of 29 cases which he observed personally, 26 were found to have "no deformity." This is surprising as I do not remember seeing anyone who had lost a patella without observing some flattening of the knee when it was viewed in the semi-flexed position, and also appreciable reduction in the circumference of the thigh on the affected side.

It is common ground that excision of the patella breaks the continuity of the rectus tendon and the patellar ligament. This deficiency is not always made good by suture of the lateral expansions of the quadriceps. I have seen a good number of imperfect results. It may be that a final decision as to the merits of excision in the treatment of these injuries should be withheld till the late results of a comparable series of fractures competently sutured have been recorded. Meanwhile, I think that suture with multi-ply stainless steel wire is the method of choice.—I am, etc.,

Radcliffe Infirmary, Oxford. MAX PAGE.

Transmesenteric Hernia

SIR,—I was very interested to read Mr. Peter Martin's account (Feb. 16, p. 238) of his case of obstructive mesenteric hernia.

On Jan. 22 I operated on a patient who was suffering from strangulated transmesenteric hernia. There was a defect in the mesentery of about 1 foot (30 cm.) from the ileo-caecal junction, and the extraordinary feature was that the loop of bowel was strangulated on both sides of the mesenteric defect. The bowel had apparently passed from right to left, and of this 6 inches (15 cm.) had passed back again. The bowel was non-viable, and resection of the terminal 18 inches (45 cm.) of the ileum was performed and end-to-side anastomosis of the ileum to the caecum was effected. The margins of the opening in the mesentery, which were smooth and rounded, measured approximately 2 inches by 2 inches (5 cm. by 5 cm.).

The patient made an uninterrupted recovery and was discharged from hospital on Feb. 15.—I am, etc.,

Liverpool. JAMES MORONEY.

Nitrites in Coronary Occlusion

SIR,—Standard textbooks on medicine and cardiology invariably state that nitrites are contraindicated in the treatment of coronary artery thrombosis, as well as in the pain of "cardiac ischaemia" due to infarction of the myocardium.

No further explanation is usually given, and one is left alone to reflect on this somewhat dogmatic statement.

The two relevant factors in this case are that the coronaries fill during diastole and that the coronary flow depends on the mean blood pressure. Now the diastolic pressure is little influenced in coronary thrombosis, but there is a sharp fall in the systolic pressure. Thus, although the mean blood pressure is less, the diastolic should still be adequate to fill the unaffected coronaries.

Nitrites are supposed to work by acting directly on the smooth muscles of the arteries, producing relaxation. One may well ask if they have any effect on arteries which are hardened and thickened by atherosclerosis. Undoubtedly they must have, as the efficacy of nitrites is proved in the relief they afford in the treatment of angina pectoris.

Coronary thrombosis, like occlusion of an artery of a limb, probably also sets up a certain amount of reflex spasm in the affected artery, its branches, and possibly in the rest of the coronaries, thus accounting for the severe degree of shock that accompanies this phenomenon. Sir Thomas Lewis suggested that the pain was not due to vascular spasm or local anoxia, but the muscular activity of the heart which liberates a pain-producing factor if the arterial supply is occluded. In cases in which the arterial supply to a portion of a limb is occluded by an embolus, for instance, papaverine has been successfully employed in improving the collateral circulation and relaxing associated reflex spasm until a better blood supply is established. Why can this principle not also be applied to the heart? If coronary thrombosis does not cause instantaneous death it is attended by all the evils complicating infarction of the myocardium. The present treatment makes no attempt to correct this and save a portion of the heart muscle from being transformed into a useless piece of fibrous tissue; furthermore it only partially treats the shock by the administration of morphine. The latter is probably only given because of its analgesic properties, as no other drug will afford sufficient relief from pain.

What, then, is the contraindication to a *careful* administration of intravenous saline or plasma as well as the continuous use of small doses of nitrites for 24 to 36 hours, or possibly longer? The objection to the use of intravenous therapy would be that, although beneficial in the treatment of shock, it would throw an extra burden on the already diseased heart, while in most other cases of shock the myocardium is relatively sound. Of the use of nitrites one might say that besides further lowering the blood pressure, in organs in which infarction is said to occur, there is an already poor or non-existing collateral circulation and that dilating the other arteries might only make matters worse by increasing the degree of infarction.

I should be grateful to know if, in the opinion of competent authorities on the matter, the use of nitrites and a drip is justified in attempting to save the myocardium from permanent scarring and improve the prognosis in occlusion of the coronary arteries.—I am, etc.,

Mayday Hospital, Thornton Heath. H. JASLOWITZ.

Ocular Signs in P.O.W.s from the Far East

SIR,—I should like to reply to Dr. H. G. Garland's letter (Jan. 26, p. 143) and his criticisms as they arise, as well as add some further notes.

Major Dansey-Browning and I sent our preliminary report for censorship in September, 1945. Its purpose was to draw attention to an ocular syndrome, apparently previously overlooked, before the clinical material was dispersed, a more detailed and extensive investigation on greater numbers to follow. Publication for a variety of reasons was delayed till January, 1946.

It should be borne in mind that we were dealing only with the ocular signs as we found them and as described in the literature. The essential features for stress were: (1) There was no ocular paresis as described. (2) There was no peripheral field constriction as described. (3) The proportion of cases of bilateral retrobulbar neuritis (the use of this term is more fully discussed below) and having a central scotoma to white targets having a similar shape to the toxic amblyopia was high. (4) While reviewing the relevant literature from the ophthalmic aspect we carefully avoided that "slough of despond," dietetic deficiency theories, for we felt that by doing so we were concentrating attention on a more important feature—namely, the irreversible optic atrophy and its relation to the toxic amblyopias.

The syndrome as described by Dr. Garland is similar to that described under the rarer manifestation of beriberi and pellagra in Manson's *Tropical Diseases* (11th ed., 1940) and in Stitt's *Tropical Diseases* (6th ed., 1942). But in none of these accounts are the ocular signs and sequelae stressed which Major Dansey-Browning and I feel are so important and so frequently overlooked.

I endorse Dr. Garland's thesis that the syndrome is due to a dietary deficiency, probably in the B group of vitamins, but repudiate the cavalier dismissal of the part vitamin B_1 plays. I think it would be reasonable to add to vitamin B_1 deficiency, nicotinic acid deficiency and probably an unknown fraction of the B complex. But although vitamin B_2 deficiency was expected—for one finds it difficult to reconcile deficiency of a fraction of a complex and have little or no evidence of deficiency of the remainder of that complex—yet nevertheless this has been the case, as some figures given below will demonstrate. Vitamin a deficiency was possibly present, in that difficulty in seeing, particularly in a dim light, was a marked complaint among thise showing a scotoma during the onset of their visual disturbance; how much should be ascribed to vitamin A deficiency is debatable.

Dr. Garland's objection to the term "retrobulbar neuritis" is understandable, and there is a growing body of opinion that it should be replaced by "neuropathy," but the term was used intentionally for the following reasons: (1) A term sanctioned by use, conveying a clinical picture which finally resolves itself in either primary or secondary optic atrophy and having as a cardinal sign pain on moving the eyes. (2) It brings it into line with the other toxic amblyopias, particularly tobacco–alcohol amblyopia (*vide* Carrol and others). (3) The pathological description, although demonstrating that the nerve lesion is a degeneration and, in so far as the cranial nerves are concerned, irreversible, the presence of congestion of the meninges and haemorrhages does not exclude an inflammatory factor. (4) In quite a proportion of cases was seen the blurring of the edge of the disk and the "moth-eaten" appearance of the papillo-macular retinal fibres, particularly to red-free light, one associates with a post-neuritic optic atrophy, and so "neuritis" is preferable to the vague term "neuropathy" in this instance.

The collaboration between Major Dansey-Browning and myself was broken in November by my being posted, and so I am unable to refer to much of our preceding work. However, these figures are from work done in this centre by me since that date and are self-explanatory.

Of 87 cases examined 62 patients gave a definite history of beriberi. There were 38 who had some treatment for beriberi; this treatment was restricted by supplies, and varied from small amounts of marmite, rice polishings, yeast, thiamin tablets, and injections (injections only for a short while for moribund cases), nicotinic acid, a "green grassy stuff they made themselves," shark oil (vitamin A), and red palm oil (vitamin A). There was a bilateral central scotoma to 3/1000 mm. white target with enlargement of the blind spot and a typical "tailing" of the scotoma directed towards the blind spot in 16 cases, 11 of whom gave a history of pain on moving the eyes as one of the important factors of visual disturbance noticed, and only 4 of these had had any attempt at treatment, which was given solely because they "were very ill, and then only for a short while because supplies were so limited and others as ill as they were." One of these was given "grass extract," one marmite, one yeast, and the worst of all had a few thiamin injections. Only one of the cases showed nerve deafness and had been referred to an otologist. Of the total number 2 alone showed ariboflavinosis, looping of the limbal vessels, and gave a history of photophobia and keratitis.

It should be remembered that they were all Category A men before capture, and therefore 30 myopes among them is a rather high proportion. I am under the impression, although I have no notes to confirm this, that there is an equally high proportion of arcus senilis. It appears, therefore, that malnutrition may have some bearing on the incidence of these two conditions, particularly myopia.

In conclusion may I thank Mr. Fitzgerald Moore for a personal communication which has been most helpful, and express my unbounded admiration for those who, with but the most primitive equipment, managed to make vitamin extracts locally

and dispense accurate spherical corrections, the lenses being made from broken car wind-screens and the frames from such material as was available.—I am, etc.,

W. M. RICH,
Capt., R.A.M.C.; Ophthalmologist.

Military Hospital, Lincoln.

Suprapubic Drainage of the Bladder

SIR,—In the *Surgery of Modern Warfare* (p. 668) and in an article by R. Ogier Ward and E. W. Riches it is recommended that in cases of retention of urine due to spinal injury permanent suprapubic drainage should be established by a catheter introduced suprapubically by a method of blind puncture. The patient is to be put in a partial Trendelenburg position, the highest point of bladder dullness mapped out, and then the puncture introducing the catheter is made at this point, or at the mid-point between the umbilicus and symphysis, whichever is the lower. The puncture is to be made in a backward and downward direction. The bladder is allowed to empty slowly for 48 hours. This initial slow emptying is necessary until the track is sealed off and prevents the complication of a contracted bladder at a later stage.

On June 11, 1945, a man of 75 was admitted to hospital with acute retention due to prostatic obstruction. Before admission attempts had been made, without success, to pass a catheter; further fruitless attempts were made in hospital. A very competent house-surgeon, having got the book referred to above, faithfully followed the very full and very clear instructions. All appeared to go well, no difficulties were encountered, and the bladder was emptied slowly as directed. A few days later the patient's abdomen began to get distended, and for various reasons I was asked to take over the case. The bladder was draining satisfactorily, and at first I thought the condition was one of mild paralytic ileus. However, it soon became evident that there was a partial obstruction of mechanical nature; this never became complete, though it caused great anxiety. By June 25 he was much better so far as the obstruction went, but he developed pneumonia. This was slow to clear up and his heart gave much anxiety. By Aug. 23 he was well enough for prostatectomy. I began by enlarging the suprapubic opening towards the pubis, and, expecting the bladder to be adherent to the anterior abdominal wall, was horrified to find I had opened small intestine. Further investigation revealed that the peritoneal reflection from the bladder was low, only just above the pubis; the bladder had fallen away from the abdominal wall, and the space between was filled with coils of small intestine firmly matted round the track of the catheter. When these latter coils had been separated as far as seemed wise, the damaged intestine repaired, and the peritoneum closed, the patient's condition being still good enough, the prostatectomy was proceeded with. From this operation the recovery was at first surprisingly uneventful. There was no intestinal trouble, and by the tenth day the suprapubic wound was dry, though not superficially healed, and he was passing urine normally every two hours. On the twelfth day there was haemorrhage into the bladder with clot retention; this was overcome by washing out. On the fourteenth day the heart began to give trouble, but settled down again, and he went home on Sept. 28.

From then he was well until just before Christmas, when acute intestinal obstruction developed and he was readmitted to hospital. At the operation on Christmas Day the cause of the obstruction was found, as expected, to be due to adhesions between loops of small intestine. These were divided and he made an uninterrupted recovery.

It is evident that when the original puncture was made the bladder was, by its distension, pressed firmly against the anterior abdominal wall; that the peritoneum was traversed, and that as the bladder emptied slowly, as directed, it fell away, the catheter bridging the gap; small intestine followed the bladder down, surrounding the catheter, and became adherent round the track. It seems to me that puncture as high as described must usually traverse free peritoneum, and that the adherence of the bladder at the puncture site cannot be safely counted on. It may be argued that the operation of puncturing the bladder as described is not intended for cases when a further operation on the bladder is expected, and that had he been left with the indwelling suprapubic catheter no further trouble would have arisen, but I cannot feel that it is very desirable to have coils of intestine matted round the catheter track.

This unfortunate case confirms my feeling that it is much safer, when performing suprapubic drainage, to expose the bladder, strip up the peritoneum, and introduce the catheter under vision. This small and simple operation can easily, if desirable, be done under local anaesthesia.—I am, etc.,

E. W. SHEAF.

Guildford.

Cardiac Massage

SIR,—I would like to support Prof. John Morley (Feb. 2, p. 177) in his objection to the use of intracardiac—or intravenous—injections of adrenaline in cases of cardiac failure during anaesthesia. In the past I have had clinical proof of the fact, long known to pharmacologists, that adrenaline causes the heart to go into fibrillation. Few experiences in surgery are more dramatic or pleasing than to see a needle, inserted into the heart of an apparently dead patient, begin to swing from side to side, like an inverted pendulum, in time with the returning pulse. I know of no method of stimulating the heart more certain, speedier, or simpler. I find the spinal needles of Pitkin or Howard Jones very suitable for the puncture, as they are long, fine, and usually ready sterilized on the anaesthetist's trolley. The vital importance of speed cannot be over-emphasized, for there is much evidence to show that cardiac cessation for over 1½ minutes results in irreversible cerebral changes, especially in the middle-aged and elderly. I have had two cases, and I know of others, in men of over 65 years of age in whom the heart has not been stopped for more than 1½ to 2 minutes before it was re-started by needling. Both of these men showed mental changes similar to those met with in senile imbecility; these changes persisted for five to seven days, and subsequently the patients showed a complete amnesia for this period.—I am, etc.,

J. B. OLDHAM.

Liverpool, 1.

SIR,—While supporting Mr. Hamilton Bailey (Jan. 5, p. 29), Prof. John Morley (Feb. 2, p. 177), and Mr. Harold Dodd (Feb. 16, p. 252), I would like to point out that much of the information required by surgeons and anaesthetists on this important matter is contained in an article called "Cardiac Resuscitation" in the *Journal* of Sept. 21, 1935 (p. 540).—I am, etc.,

W. B. PRIMROSE.

Glasgow Royal Infirmary.

SIR,—Mr. Hamilton Bailey is such an eminent surgeon that it is with diffidence I join issue with him in his statement that adrenaline injection is of little or no use in cardiac failure (Jan. 5, p. 29), or stoppage of the heart in certain conditions. Dr. Carl Bodin, of Budapest, about 23 years ago in an exhaustive letter to the *Lancet* recorded a remarkable case of resuscitation by the injection of 1 ml. of 1 in 1,000 adrenaline chloride into the right ventricle, the patient being dead for three minutes. All signs of life had gone—corneal reflexes, respiration and pulse, and no heart sounds. The patient being very obese, with a 3-in. (7.5-cm.) needle he injected 1 ml. adrenaline chloride into the right ventricle. He advised that the best position for this was to inject into the fourth left intercostal space, keeping close to the sternum to avoid the internal mammary artery. This seems to be the safest area for the right ventricle; it avoids the conus arteriosus and the anterior descending branch of the left coronary artery.

I followed this method many years ago in a patient dying of pneumonia. He was *in extremis* and moribund; he revived remarkably, but unfortunately his family got him out of bed to relieve his bladder in two hours' time, and he collapsed. One should not wait, of course, until all signs of life disappear, but I think the general practitioner should attempt this method in more cases of the dying and possibly some lives might be saved.—I am, etc.,

JOHN R. O'BRIEN.

Southall.

Anaesthesia

SIR,—Dr. W. A. Bellamy (Feb. 16, p. 252) falls into the common error of assuming that so-called modern anaesthetic methods are more difficult of accomplishment and produce less efficient results than those he describes. I always try to impress on people that the seemingly more elaborate procedures are in reality much easier for the anaesthetist and much more satisfactory for the surgeon and patient than some of the apparently simpler ones. Take for instance a common emergency. A well-built muscular man is admitted with a diagnosis of perforated gastric or duodenal ulcer. The abdomen is as rigid as a board and the patient frequently groaning in agony.

According to Dr. Bellamy anaesthesia is induced either by open ether or by the very simple Boyle's apparatus. Even a skilled anaesthetist often fails to produce anything approaching satisfactory operating conditions using such methods. Relaxation is often incomplete, and the exaggerated diaphragmatic movements so characteristic of deep ether anaesthesia are a source of embarrassment to the surgeon.

The method I prefer, though seemingly more complicated, is in reality much easier to perform and produces infinitely better conditions for the surgeon. The patient is put to sleep with an intravenous barbiturate and a bilateral intercostal nerve block performed. Nobody could describe this as difficult. It produces absolute relaxation of the abdominal wall. Anaesthesia is then maintained with light cyclopropane using to-and-fro absorption, certainly one of the simplest and least toxic general anaesthetics. No endotracheal tube is needed, and frequently a pharyngeal airway can be dispensed with. The operative field is very quiet and recovery is quick and uneventful in contrast to the prolonged period of depression which follows a deep ether narcosis.

One could cite numberless examples showing that the much-maligned modern methods are much simpler and safer than the older ones.—I am, etc.,

Botleys Park, Surrey. F. G. ETHERIDGE.

SIR,—I never quite know whether anger or disappointment is the more prevalent when I read letters like that of Dr. Bellamy; I trust, however, that my reply is more in sorrow than in anger.

There must be many hundreds of anaesthetists in the English-speaking countries who are devoted to their specialty and who spend a great deal of thought on how they can make their patients safer for surgery. Many of us even correspond across land and ocean to the same end. A number of us in Britain, banded together under the auspices of the Anaesthetics Section of the R.S.M., attend meetings where we discuss and criticize innovations and exchange views. Were Dr. Bellamy to attend our gatherings I can assure him that he would find no attempt to wrap up our art "in a halo of Heath-Robinson mumbo-jumbo" but, on the contrary, a sincere and honest attempt to probe the many mysteries still hidden from us. We even publish our proceedings. This being so, I feel rather hurt that Dr. Bellamy should have been so unfair.

I agree that all new things are not necessarily good things; but all good things were once new, and had they not been investigated at the time would not have survived to benefit mankind. There is no need to pursue this moral. Dr. Bellamy asks, in effect, why anaesthetists do not stick to the same techniques as were prevalent twenty years ago. I reply: for the same reason that we no longer travel between London and Aylesbury by stage coach; we have discovered better means. Surgeons have greatly increased their surgical repertoire during twenty years, and embark upon heroic procedures many of which are only made possible by modern methods of anaesthesia.

With regard to teaching, Dr. Bellamy may derive some comfort from the fact that at least one hospital is considering a proposal to teach undergraduates anaesthetics at special operating sessions upon patients selected to withstand the rigours of "simple" anaesthetics, thus ensuring that students may gain experience *sans* "mumbo."

The remarks about deaths during anaesthesia are misleading, and the fallacy involved has only recently been exposed in your correspondence columns. Suffice it to recall that one of the many causes why these fatalities do not decline is the increase in the surgical treatment of conditions once thought inimical to surgery. Another is the ill-advised administration of pentothal either to unsuitable subjects or in unsuitable surroundings with no resuscitative drugs or oxygen at hand in case of difficulties. The administration of both chloroform and pentothal might be summed up in the following slogan: Dead easy—easy dead. A better appreciation of this fact might lead to a marked fall in the number of anaesthetic fatalities.

To show that I really am not entirely consumed with anger may I extend a hearty welcome to Dr. Bellamy to attend the next general meeting of the Anaesthetics Section as my guest in order that he may assure himself that no witchcraft goes on. Time and date: 5.30 p.m., Friday, March 1. Subject: Curare.—I am, etc.,

London, W.1. A. H. GALLEY.

SIR,—Dr. Bellamy (Feb. 16, p. 252) has cast a rather obvious fly. But in case his devoted head should remain bowed and not notice an important point: the percentage of deaths under anaesthesia, which is not of necessity the same as anaesthetic deaths, may not have decreased in the last fifteen years with the advent of modern methods and apparatus, but the extent and severity of surgical procedures justifiably undertaken to-day on cases that were previously considered unfit surely make amends for the apparent complexity of the apparatus.

There are still indications for the use of open chloroform anaesthesia in surgery and obstetrics, and it can be employed in place of much apparatus which appears complicated to the occasional anaesthetist. The "professional anaesthetist," however, is prepared to use whatever form of anaesthesia is most conducive to the patient's well-being and post-operative comfort and the satisfaction of the surgeon's requirements. I submit that these criteria are more often satisfied to-day than they were fifteen years ago.—I am, etc.,

ANGUS SMITH,
Cambridge. Squad. Ldr., R.A.F. Medical Service.

Spinal Analgesia in Operative Obstetrics

SIR,—About six weeks ago I made the arduous journey to Croydon in order to watch Mr. Rufus Thomas perform a lower-segment Caesarean section under heavy nupercaine analgesia. At that time I was apparently the first visitor from London to do so, although Mr. Thomas's articles on the subject go back for some years, so I feel that my observations may be of interest. I had expected to see a competent performance, but what I actually saw was something far more than that.

I have witnessed many lower-segment Caesarean sections performed with more or less ease and perfection by many different surgeons, and I have personally performed the operation under most types of anaesthesia with the exception of spinal analgesia. It has always seemed to me that the only real difficulty in the performance of this operation lies in the accessibility or otherwise of that portion of the uterus which forms the operation field. Even the most expert anaesthetists admit that it is not easy with inhalation anaesthesia to maintain an anaesthetic which is both light enough not to injure the baby and at the same time deep enough to give adequate access to the pelvis. From what I saw at Croydon it seems to me that these difficulties are eliminated under heavy nupercaine analgesia.

From start to finish the operation went like clockwork. There was no hurry of any sort, but why should there be as the analgesia lasts for some hours? The abdominal wall was relaxed in a manner which must be the dream of the average surgeon performing the lower-segment operation. Ease of access to the lower segment was maximal, as also was ease of delivery of the head. Bleeding was practically non-existent, and the uterus expelled the placenta spontaneously through the uterine wound without interference. The baby, which weighed over 9½ lb. (4.3 kg.) entered this world in as fit a condition as I have ever seen. Completion of the operation was carried out with a maximum of care and deliberation and a minimum of worry and haste.

So much for the technical details, but what of the patient's reaction? So far as I could see she had practically none. The analgesic was given by the operator himself, and the patient did not apparently know what type of anaesthetic she was due to have beforehand. Before the operation was due to start, the resident anaesthetist was summoned, and throughout the operation he recorded the blood pressure at regular intervals. I understand from Mr. Thomas that should the systolic pressure fall below 100 he gives an injection of methedrine into the uterine wall, but on this occasion it remained at about 130 throughout. After delivery of the baby the patient complained of slight nausea, which was immediately controlled by inhalation of a little oxygen. It has been suggested that Mr. Thomas's results must depend on a well-trained team. It seemed to me that the team consisted largely of the surgeon himself, as the duties of the anaesthetist were merely to record the blood pressure and, if necessary, to administer a little oxygen if the patient complained of nausea. The assistant on this occasion, I may add, was acting for the first time.

It does seem to me that there is no place in medicine for prejudice, yet many surgeons are still objecting to all forms of spinal analgesia for Caesarean section simply because they have been brought up to do so. After all, the two series recorded by Mr. Thomas, and more recently by Dr. Louis Resnick (Nov. 24, 1945, p. 722), total up to over 600 cases without a single fatality. Surely in this instance the old legal maxim of *res ipsa loquitur* applies—the facts speak for themselves.—I am, etc.,

London, W.1. D. G. WILSON CLYNE.

Morbidity and Spinal Analgesia

SIR,—In following with interest the correspondence on the scope of spinal analgesia in Caesarean section one notices that no reference has been made to morbidity. Complications not leading to death, like invisible exports, do not always figure in the balance sheet. What information have anaesthetists and neurologists on sequelae such as paresis, sphincteric involvement, etc.? Obviously any one operator has probably not enough experience to be able to assess these risks. Are women less prone to these than men? Is the fear of their occurrence justified or mere prejudice?—I am, etc.,

London, W.1. KENNETH BOWES.

Significance of the Erythrocyte Sedimentation Rate

SIR,—May we be permitted to reply to some of the points raised in the correspondence which followed our letter (Oct. 27, 1945, p. 584). Dr. J. W. Shackle (Nov. 24, p. 742) refers to acid-fast bacilli found in gastric juice. In the 7 cases referred to, tuberculosis was produced in guinea-pigs by inoculation of gastric washings. We had read the interesting article to which we think he referred (Yates, Oct. 20, p. 530). Details of the 7 cases we quoted may be of interest. The E.S.R. figures refer to readings obtained in standard Westergren tubes using Heller and Paul 3:2 ammonium and potassium oxalate mixture.

Case No.	Sex	Hb % (Haldane)	E.S.R. Date	E.S.R. Results 1 hr.	E.S.R. Results 2 hr.	Gastric Lavage (Guinea-pig Inoc.) Date	Gastric Lavage (Guinea-pig Inoc.) Result	Skiagram
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D. G. MCINTOSH.

Quinine for Induction of Labour

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According to Dr. Bellamy anaesthesia is induced either by open ether or by the very simple Boyle's apparatus. Even a skilled anaesthetist often fails to produce anything approaching satisfactory operating conditions using such methods. Relaxation is often incomplete, and the exaggerated diaphragmatic movements so characteristic of deep ether anaesthesia are a source of embarrassment to the surgeon.

The method I prefer, though seemingly more complicated, is in reality much easier to perform and produces infinitely better conditions for the surgeon. The patient is put to sleep with an intravenous barbiturate and a bilateral intercostal nerve block performed. Nobody could describe this as difficult. It produces absolute relaxation of the abdominal wall. Anaesthesia is then maintained with light cyclopropane using to-and-fro absorption, certainly one of the simplest and least toxic general anaesthetics. No endotracheal tube is needed, and frequently a pharyngeal airway can be dispensed with. The operative field is very quiet and recovery is quick and uneventful in contrast to the prolonged period of depression which follows a deep ether narcosis.

One could cite numberless examples showing that the much-maligned modern methods are much simpler and safer than the older ones.—I am, etc.,

Botleys Park, Surrey. F. G. ETHERIDGE.

SIR,—I never quite know whether anger or disappointment is the more prevalent when I read letters like that of Dr. Bellamy; I trust, however, that my reply is more in sorrow than in anger.

There must be many hundreds of anaesthetists in the English-speaking countries who are devoted to their specialty and who spend a great deal of thought on how they can make their patients safer for surgery. Many of us even correspond across land and ocean to the same end. A number of us in Britain, banded together under the auspices of the Anaesthetics Section of the R.S.M., attend meetings where we discuss and criticize innovations and exchange views. Were Dr. Bellamy to attend our gatherings I can assure him that he would find no attempt to wrap up our art "in a halo of Heath-Robinson mumbo-jumbo" but, on the contrary, a sincere and honest attempt to probe the many mysteries still hidden from us. We even publish our proceedings. This being so, I feel rather hurt that Dr. Bellamy should have been so unfair.

I agree that all new things are not necessarily good things; but all good things were once new, and had they not been investigated at the time would not have survived to benefit mankind. There is no need to pursue this moral. Dr. Bellamy asks, in effect, why anaesthetists do not stick to the same techniques as were prevalent twenty years ago. I reply: for the same reason that we no longer travel between London and Aylesbury by stage coach; we have discovered better means. Surgeons have greatly increased their surgical repertoire during twenty years, and embark upon heroic procedures many of which are only made possible by modern methods of anaesthesia.

With regard to teaching, Dr. Bellamy may derive some comfort from the fact that at least one hospital is considering a proposal to teach undergraduates anaesthetics at special operating sessions upon patients selected to withstand the rigours of "simple" anaesthetics, thus ensuring that students may gain experience *sans* "mumbo."

The remarks about deaths during anaesthesia are misleading, and the fallacy involved has only recently been exposed in your correspondence columns. Suffice it to recall that one of the many causes why these fatalities do not decline is the increase in the surgical treatment of conditions once thought inimical to surgery. Another is the ill-advised administration of pentothal either to unsuitable subjects or in unsuitable surroundings with no resuscitative drugs or oxygen at hand in case of difficulties. The administration of both chloroform and pentothal might be summed up in the following slogan: Dead easy—easy dead. A better appreciation of this fact might lead to a marked fall in the number of anaesthetic fatalities.

To show that I really am not entirely consumed with anger may I extend a hearty welcome to Dr. Bellamy to attend the next general meeting of the Anaesthetics Section as my guest in order that he may assure himself that no witchcraft goes on. Time and date: 5.30 p.m., Friday, March 1. Subject: Curare.—I am, etc.,

London, W.1. A. H. GALLEY.

SIR,—Dr. Bellamy (Feb. 16, p. 252) has cast a rather obvious fly. But in case his devoted head should remain bowed and not notice an important point: the percentage of deaths under anaesthesia, which is not of necessity the same as anaesthetic deaths, may not have decreased in the last fifteen years with the advent of modern methods and apparatus, but the extent and severity of surgical procedures justifiably undertaken to-day on cases that were previously considered unfit surely make amends for the apparent complexity of the apparatus.

There are still indications for the use of open chloroform anaesthesia in surgery and obstetrics, and it can be employed in place of much apparatus which appears complicated to the occasional anaesthetist. The "professional anaesthetist," however, is prepared to use whatever form of anaesthesia is most conducive to the patient's well-being and post-operative comfort and the satisfaction of the surgeon's requirements. I submit that these criteria are more often satisfied to-day than they were fifteen years ago.—I am, etc.,

Cambridge. ANGUS SMITH, Squad. Ldr., R.A.F. Medical Service.

Spinal Analgesia in Operative Obstetrics

SIR,—About six weeks ago I made the arduous journey to Croydon in order to watch Mr. Rufus Thomas perform a lower-segment Caesarean section under heavy nupercaine analgesia. At that time I was apparently the first visitor from London to do so, although Mr. Thomas's articles on the subject go back for some years, so I feel that my observations may be of interest. I had expected to see a competent performance, but what I actually saw was something far more than that.

I have witnessed many lower-segment Caesarean sections performed with more or less ease and perfection by many different surgeons, and I have personally performed the operation under most types of anaesthesia with the exception of spinal analgesia. It has always seemed to me that the only real difficulty in the performance of this operation lies in the accessibility or otherwise of that portion of the uterus which forms the operation field. Even the most expert anaesthetists admit that it is not easy with inhalation anaesthesia to maintain an anaesthetic which is both light enough not to injure the baby and at the same time deep enough to give adequate access to the pelvis. From what I saw at Croydon it seems to me that these difficulties are eliminated under heavy nupercaine analgesia.

From start to finish the operation went like clockwork. There was no hurry of any sort, but why should there be as the analgesia lasts for some hours? The abdominal wall was relaxed in a manner which must be the dream of the average surgeon performing the lower-segment operation. Ease of access to the lower segment was maximal, as also was ease of delivery of the head. Bleeding was practically non-existent, and the uterus expelled the placenta spontaneously through the uterine wound without interference. The baby, which weighed over 9½ lb. (4.3 kg.) entered this world in as fit a condition as I have ever seen. Completion of the operation was carried out with a maximum of care and deliberation and a minimum of worry and haste.

So much for the technical details, but what of the patient's reaction? So far as I could see she had practically none. The analgesic was given by the operator himself, and the patient did not apparently know what type of anaesthetic she was due to have beforehand. Before the operation was due to start, the resident anaesthetist was summoned, and throughout the operation he recorded the blood pressure at regular intervals. I understand from Mr. Thomas that should the systolic pressure fall below 100 he gives an injection of methedrine into the uterine wall, but on this occasion it remained at about 130 throughout. After delivery of the baby the patient complained of slight nausea, which was immediately controlled by inhalation of a little oxygen. It has been suggested that Mr. Thomas's results must depend on a well-trained team. It seemed to me that the team consisted largely of the surgeon himself, as the duties of the anaesthetist were merely to record the blood pressure and, if necessary, to administer a little oxygen if the patient complained of nausea. The assistant on this occasion, I may add, was acting for the first time.

It does seem to me that there is no place in medicine for prejudice, yet many surgeons are still objecting to all forms of spinal analgesia for Caesarean section simply because they have been brought up to do so. After all, the two series recorded by Mr. Thomas, and more recently by Dr. Louis Resnick (Nov. 24, 1945, p. 722), total up to over 600 cases without a single fatality. Surely in this instance the old legal maxim of *res ipsa loquitur* applies—the facts speak for themselves.—I am, etc.,

London, W.1. D. G. WILSON CLYNE.

Morbidity and Spinal Analgesia

SIR,—In following with interest the correspondence on the scope of spinal analgesia in Caesarean section one notices that no reference has been made to morbidity. Complications not leading to death, like invisible exports, do not always figure in the balance sheet. What information have anaesthetists and neurologists on sequelae such as paresis, sphincteric involvement, etc.? Obviously any one operator has probably not enough experience to be able to assess these risks. Are women less prone to these than men? Is the fear of their occurrence justified or mere prejudice?—I am, etc.,

London, W.1. KENNETH BOWES.

Significance of the Erythrocyte Sedimentation Rate

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again ask, Upon what facts and figures does he base his statement? and this request includes stage of pregnancy and normality or otherwise of the case. You must know how to carry out a procedure if you are to have success.—I am, etc.,

Tain. E. K. MACKENZIE.

Artificial Pneumothorax Refill

SIR,—Like most of my colleagues who have worked for a few years in sanatoria and chest hospitals, I have given several thousand refills for pneumothorax, and perforated the parietal pleura several hundred times for different reasons. I suppose that it was chiefly luck that kept "pleural shock" away, but I have never seen a case. As to the "humanity and common sense" invoked by Dr. Alastair Allan (Nov. 3, 1945, p. 607) in the cause of local anaesthesia for pneumothorax refills, my memory is most vivid as regards the humane aspect; as soon as I deemed reasonable in view of the clinical and fluoroscopic findings, I abandoned local anaesthesia—after informing the patient that I was about to do so—and plunged my sharp Morland's needle into the previously visualized space. The number of patients who regretted this change was strikingly few; and in fact at one time I deliberately anaesthetized a large number of my "regulars," who usually were given their refill straight, with a view to getting their reactions. They were unanimous to the effect that the straight refill was much to be preferred—time spent was a little shorter, the more nervous of them could "feel" the refill needle in its course through the anaesthetized track, the prick with a sharp Morland's needle thrust through the chest wall swiftly and with a steady hand was certainly no more painful than the insertion of the anaesthetic needle, and finally there was often an aching bruised feeling at the site of injection hours after.

It goes without saying that if there is the slightest doubt as to the clearance of the lung under the proposed site of puncture, the refill needle must by no means be used as a space-seeker. I do believe with Dr. C. F. Hawkins (Nov. 24, p. 742), whose letter I have just read, that pleural shock is no more likely with one sharp needle than with another, though I should be glad to see statistical evidence on the matter.—I am, etc.,

Burgeo, Newfoundland. HORACE D. ROSENBERG.

Homosexuality

SIR,—It was refreshing to see homosexuality ventilated in Mr. Stanley-Jones's letter. Few subjects are so persistently ignored by both doctors and laity. Indeed it might be claimed that one's attitude towards it is a useful index of tolerance, sympathy, and understanding. Even most doctors appear to become "hot and bothered" and full of violent prejudice when it is raised. It is high time that a cooler and more scientific approach were adopted. Our penal laws against it are a disgrace to civilization and a vestige of those abominable days when a man was hanged for stealing a sheep, etc. I would suggest that the air of grand tragedy usually evident on the few occasions when the matter is discussed is out of place. Too much is said about "curing" the condition, and I doubt exceedingly whether it is "now generally conceded that the majority of cases of homosexuality yield to treatment by psychotherapeutic measures." A small draught of Prinzhorn would be salutary to dispel such optimism. The very radical opinions of René Guyon as shown in his *Sex Life and Sex Ethics* are often dismissed as somewhat naive, but are a step in the right direction.

What is wrong with homosexuality? That seems to be the crux of the matter. Can we not say that it is an immature attitude which prevents, except in very rare cases, a completely satisfying love relationship of body, mind, and spirit? In other words a disharmony which allows the part to supersede the whole. Such an immaturity is by no means confined to homosexual relations, but is even more commonly evident in many heterosexual activities. This is admirably brought out by Solovyev in his famous work *The Meaning of Love*.

It takes all sorts to make a world, and the immature have their parts to play. It is also a commonplace that many great men have shown a more than usual degree of bisexuality. Wagner once exclaimed, "What is art but a way of remembering youth?" So we should not talk too readily of curing homosexuality any more than we talk of curing red hair. Rather it is our attitude which needs changing. It is true that from the utilitarian point of view homosexuality and many types of heterosexuality cause a diminution of the birth rate. In countries with a more civilized criminal code than ours these are only crimes when they violate the rights of others. Perhaps in another hundred years we shall catch up.—I am, etc.,

Edinburgh. G. G. SHERRIFF.

Normal Temperatures

SIR,—The annotation on basal body temperatures and the menstrual cycle (Feb. 9, p. 209) is of great interest. About the year 1900 the "premenstrual wave" of temperature was noticed and discussed by several sanatorium observers. Carefully taken temperatures were for long the best guide we had to the prescription of rest and/or exercise. For instance, *The Open-Air Treatment of Pulmonary Tuberculosis* (F. W. Burton Fanning, 1909) refers to this on page 36. As it was only seen in about half the patients Dr. Burton Fanning thought it was a symptom of tuberculosis. Marcus Paterson regarded it as physiological, and hence his "danger signal," needing bed rest, was 99° F. in man, 99.6° in women (mouth temperatures).

At Ventnor I was satisfied that there was a menstrual cycle. The temperature was taken in the mouth for ten minutes, all necessary precautions being observed. The waking temperatures were 97–97.6° usually, the rise, of a degree or more, showing more clearly than in the daytime, when, of course, the influence of varying activity modified the readings. I missed the "sharp fall," my impression being that the fall was rather gradual, either before or during menstruation. It was more frequently stated and taught that menstruation resulted in a *rise* of temperature; but this was only associated with considerable pain or malaise among our Ventnor patients.

The use of the clinical thermometer is casual: "a half-minute thermometer; everyone knows that the normal is 98.4" (in centigrade countries it is 37° = 98.6°). So far I have rarely met any practitioner who had been taught that a healthy woman might have a normal day mouth temperature of 99.4° at some time in the monthly cycle. Now we have not only confirmation, but explanation; and at last it may be taught to medical students and to nurses in training.—I am, etc.,

Llanishen, Cardiff. JAMES C. GILCHRIST.

Bornholm Disease

SIR,—The description of Bornholm disease (Feb. 16, p. 242) does not mention what seemed to me its most distinguishing feature in those very few cases I have seen. The combination of an anxious expression, a still abdomen, and an inspiratory check rather than the expiratory grunt of lobar pneumonia seemed to me of considerable importance in establishing the diagnosis on clinical grounds.

The involvement of the neck and shoulder muscles surely suggests referred pain via the phrenic nerve.—I am, etc.,

Richmond, Yorks. A. F. T. ORD.

The Metric System

SIR,— *Full fathom five (9.5 m.) thy father lies;*
Of his bones are coral made.

While agreeing that the present chaotic system of weights and measures used in medicine should be replaced by the metric system, one may perhaps ask whether the *Journal* is not attempting it in the wrong way. Two most interesting articles that have appeared lately, of a surgeon's experiences in Siam, and another at sea off Deal, have been ruined and made most irritating to read, by such statements as, e.g., "the hut was flooded to a depth of about 2 feet (61 cm.), and the bunks were only 2–3 inches (5–7.5 cm. above the water." Again, that there was "a depth of 5 fathoms (9.5 m.)" and a reference to an "area of 30 sq. miles (50 sq. km.)" and others (I quote from memory) which I am certain their authors never wrote—and in terms in which they never thought. These terms are not used in any medical reference whatever, and the fathom anyway is traditional sea measure that the medical profession has no right or reason (or, I hope, wish) to change. I wonder what would have been the equivalent of a speed in knots?

If we do eventually adopt metric measure, we shall not do so in the way in which the *Journal* is attempting it. In this

week's issue a mixture is given as containing "Pot. brom. gr. x (*0.65 g.*)" to a dose, and an ointment made up to a balance of ʒi (*28.4 c.cm.*)." It is obvious that the dose will become 50, 60, 100 mg., and the volume of ointment 30, 50, 100 c.cm., or similar round figures, avoiding these unnecessary and irritating decimals.

It is useless to try to introduce metric measure by finding exact equivalents to our existing measures; the only way will be to recast the whole system of dose, frequency, etc., at one fell swoop, in a more manageable form, which may attract rather than repel.—I am, etc.,

F. KEITH HAYMAN.

*** One important reason for giving the metric equivalent is to help the foreign reader, who will easily translate the exact equivalent into the dosage used in his country.—ED., *B.M.J.*

Chartered Society of Physiotherapy

SIR,—I find with surprise that many of my colleagues are unaware of the self-denying ordinance which is incorporated by the Chartered Society of Physiotherapy in their by-laws.

The by-law in question requires them to refuse to treat any patient except under the direction of a registered medical practitioner, and was incorporated in the Royal Charter which was granted to them in 1920. The principle of medical direction had prior to this been completely accepted by members of the Society, since they believed that they would gain much from their association with the medical profession, ensuring as it does continuity of science and practice. It has been said in some quarters that the Society's action in withdrawing recently from the Board of Registration of Medical Auxiliaries was a step towards repudiating this obligation. I am able to state, however, that this suggestion has never been entertained, whilst it is unlikely that the Privy Council would permit such an alteration in the by-laws which would ultimately be to the disadvantage of the patient. Since the members of the Chartered Society have thus largely entrusted their future to the medical profession, it would seem to be just that we should make every effort to co-operate with them in both their private and their public work even more than we have done in the past.—I am, etc.,

London, W.1. W. S. C. COPEMAN.

Merchant Seamen's Health Ashore

SIR,—As one whose professional activities are solely concerned with the health of the officers and men of the Merchant Navy, I was deeply interested in the article by Mr. James S. Hall (Feb. 16, p. 244). I and other medical officers working in connexion with the Merchant Navy Reserve Pools see the sailor at a somewhat different angle from Mr. Hall. We see him when he is ashore, Mr. Hall when he is afloat; and this may be the explanation of some rather striking differences in the incidence of disease as it affects the Merchant Navy.

Mr. Hall says "pure neurosis was rare." In 5,113 cases of illness or injury causing unfitness for sea-going seen at this Pool between January, 1945, and December, 1945, psychoneurosis accounted for 9% (as against 3% in Mr. Hall's cases). The explanation of this difference probably lies in the fact that group loyalty is strong enough to make a man withhold his symptoms until he gets ashore, when he knows that his unfitness for duty no longer prejudices the safety of his ship or throws extra strain on his shipmates.

Again, Mr. Hall says "venereal disease is high in the scale" (accounting for about 7% of his series). We, on the other hand, find just over half that figure, with syphilis and gonorrhoea about equally balanced. Finally, lest the young ship surgeon, having read Mr. Hall's article, be too prone to dismiss lightly symptoms of peptic ulcer, I would point out that during the same period at this Pool we have had 116 cases of gastric or duodenal ulcer (2%), all confirmed by investigation: hardly "an extremely rare complaint." In short, we find the sailorman much more neurotic, considerably more dyspeptic, and either less concupiscent or more careful than does Mr. Hall.—I am, etc.,

ALAN WATSON,
Senior Medical Officer,
Merchant Navy Reserve Pool.

London, E.1.

Obituary

W. CAMAC WILKINSON, M.D., F.R.C.P.

Dr. Camac Wilkinson died on Feb. 2 at Virginia Water at the age of 88. For the greater part of his life he devoted himself with unflagging enthusiasm to one cause—the use of tuberculin for the diagnosis and treatment of tuberculosis—and urged its value as a curative agent long after most other physicians had discarded it for that purpose. A disciple of Robert Koch, whom he first met in 1884, and who gave him personal instruction and encouragement in later years, he shared Koch's belief, announced in 1890, that a cure had been found for early cases of phthisis, and from that time onwards Wilkinson advocated tuberculin therapy with polemical pen but dwindling success.

William Camac Wilkinson, a native of Sydney, went to Sydney University as a student of classics and won a scholarship and gold medal on the way to graduating B.A. After gaining further distinction in science at Sydney he came to England to enter University College Hospital, taking the M.B.Lond. in 1882 with first-class honours in medicine and a scholarship and gold medal in forensic medicine. He proceeded M.D. two years later and was elected F.R.C.P. in 1902. At U.C.H. he was awarded the Fellowes gold medal in clinical medicine and other prizes and an exhibition and the Atchison scholarship. Post-graduate study in clinics at Strasbourg and Vienna was the next stage in his career. Returning to New South Wales he became physician to the Royal Prince Alfred Hospital, physician to the ear, nose, and throat department of the Sydney Hospital, and lecturer in medicine and pathology in the university. In 1909 the Royal College of Physicians of London awarded him the Weber-Parkes prize for the best essay on a subject connected with tuberculosis; the title of this essay was "Tuberculin in the Diagnosis and Treatment of Tuberculosis," and a second edition of it appeared in book form in 1912.

In 1910 Camac Wilkinson left Australia to settle in London as a consultant. For many years he acted as honorary director of a tuberculin clinic for ambulant patients in Nottingham Place, W., and gathered around him pupils in the hope of spreading further the doctrine he held. He was also instrumental in founding a dozen other clinics in London and other towns, but they had all disappeared by the end of the war of 1914–18. His publications, apart from many letters and articles in medical journals, included books on *Treatment of Consumption*, which appeared in 1908; *Principles of Immunity in Tuberculosis* (1926); and *Tuberculin: Its Vindication by Technique* (1933), the first part being devoted to tuberculous disease of the eye, and the second to the diagnosis, treatment, and prevention of phthisis. His belief, stated over and over again, was that sanatoria should be reserved strictly for those cases that could not be treated at tuberculin clinics in accordance with his own method. He held that no risk arose from treating open tuberculosis, in ambulant patients, with tuberculin even in large doses, and that it quenched infection at the source. Nothing shook him from this article of faith, or from his conviction that tuberculin had never had a fair trial.

LADY STANTON, M.R.C.P.

Elizabeth O'Flynn, as she was known to her medical friends and colleagues, died on Feb. 1 in the Hospital of St. John and St. Elizabeth from influenzal bronchopneumonia. A week before her death, in spite of physical weakness, she was working at the Mothers' Hospital, Clapton, but for years ill-health had made her life a heavy and difficult struggle, calling for courage and constant effort from one with her frail physique.

A correspondent writes:

Those who witnessed her gallant jesting at her own expense when lying ill twenty years ago could not help but pay tribute to that courage which failed neither in the face of severe pain nor in the knowledge that her arm might be amputated in the effort to save her life. Elizabeth O'Flynn studied at the London School of Medicine for Women and in Edinburgh, and when during the war of 1914–18 St. George's opened its doors temporarily to women, she joined that hospital. After qualifying in 1917, she was successively appointed house-surgeon, house-physician, medical registrar, and assistant curator of the museum at St. George's, evidence that her ability was

recognized to be of a high order. By this time her interest in pathology was aroused, and after holding a post in the pathological department at King's College Hospital, she was appointed assistant to Dr. J. G. Greenfield at the National Hospital, Queen Square, and, soon after, pathologist to the Queen's Hospital for Children, a post she held for 25 years until the time of her death; latterly she also undertook the pathological work of the Mothers' Hospital, Clapton. In her younger days Betty O'Flynn could be the life and soul of a party; every year at the time of the Aldershot Tattoo she would join a group of young professional colleagues of both sexes for a picnic outing—occasions which still live vividly in the memory of many of those who shared them with her. With her Irish wit and quickness went a lack of sense of time, and punctuality was never one of her virtues—a fact that involved her in many difficulties. Probably the happiest time of her life was during the short period of her marriage. In 1930 she married Sir Thomas Stanton, K.C.M.G., Chief Medical Adviser to the Secretary of State for the Colonies, and was thus brought in contact with the medical problems of the Colonial Medical Service, as well as with many members of that service. With her husband, too, she enjoyed visits to hospitals on the Continent of Europe and offered hospitality in London to visiting medical men. The death of her husband in 1938 was a shock from which it seemed to her friends that she never recovered.

Elizabeth O'Flynn, before permanent ill-health overtook her, contributed, either alone or jointly, articles on various pathological subjects to the medical journals, including the first description in this country of the changes in the organs in glycogen disease (Bellingham Smith and O'Flynn, 1933).

ERNEST F. NEVE, M.D., F.R.C.S.

The death took place at Srinagar, Kashmir, on Feb. 6 of Ernest Frederick Neve, a "crusader in Kashmir," to apply to himself the title of one of his books. Dr. Neve gave nearly half a century of active service to missionary medicine in northernmost India, and for ten years or more after his retirement he continued to live in the beautiful mountainous country which he had made his home. He was born at Brighton in 1861, educated at the grammar school there, and after spending two years in Germany entered Edinburgh University in 1879 and qualified in medicine in 1882. Quite early in life his eyes were fixed on a missionary career in India, to which an elder brother had already been dedicated, and he spent the next three years in preparation, acting as resident house officer at the Livingstone Memorial Training Institution in Edinburgh. He served also during part of this time as demonstrator in anatomy at the Medical School and senior assistant in the pathological department and senior ophthalmological assistant in the Royal Infirmary.

In 1886, having obtained the M.D., with gold medal, and the F.R.C.S.Ed., he went out to Kashmir, where he was associated with Dr. Arthur Neve at the Church Missionary Society Hospital, Srinagar. This institution he continued to serve as honorary surgeon until 1923, and afterwards as consulting surgeon until his death. He was also one of the founders in 1892 of the Kashmir State Leper Hospital, and acted as its honorary superintendent for many years. While immersed in all this work in India he won the Gunning Lister Prize of Edinburgh University in 1889. His early training in ophthalmology proved useful in India, and in 1894 he published in the *Edinburgh Medical Journal* an analysis of 200 cases of cataract extraction. Other contributions to medical literature included accounts of excision in 700 cases of tuberculous glands and of 72 cases of Caesarean section in osteomalacia. His *Crusader in Kashmir*, published in 1928, referred not to himself but to his brother, and gave an account of the medical missionary work of the two of them, its beginnings and later developments in a strongly Mohammedan country.

Ernest Neve was also famous as a mountaineer; he was a foundation member of the Himalayan Club and made the first ascent of Kolahoi and other Kashmir peaks. He revised successive editions of a *Tourist's Guide to Kashmir*, and other works from his pen were *Things seen in Kashmir* and *Beyond the Pir Panjal*. In the war of 1914–18 he was captain in the Indian Defence Force Medical Corps. In 1918 he received the Kaisar-i-Hind gold medal of the first class for public services in India. He was also made a vice-president of the Church Missionary Society and the Royal College of Surgeons of England elected him to its Fellowship. In 1934 he retired from active medical work. He had been a member of the British Medical Association for fifty years and was a past-president of the Kashmir Medical Association.

Dr. JOSEPH COHEN, of Aldershot, who died on Feb. 4 at the age of 79, qualified as M.R.C.S., L.R.C.P. from the London Hospital in 1896, and held clinical assistantships there before settling in general practice. He had been a member of the B.M.A. for 48 years. A colleague writes: Joseph Cohen, as he would have wished, died in harness. He was engaged in active practice to within three days of his death. He was a general practitioner of the type which has raised our profession to the place which it occupies in the community to-day. His love and respect for his profession made him determined that nothing of himself should be spared in his exercise of it, and he gave himself unsparingly to the service of his patients. The result was that his patients, in return, gave him their deepest trust and affection, knowing that they would never look to him in vain for help, no matter what problem they brought to him. He was "guide, philosopher, and friend" to three generations of many Aldershot families, where the seniors valued his wisdom and the children his kindness and unfailing gentleness. Professionally he never allowed himself to grow rusty, and in later years, when troubled with insomnia, it was always a medical book or the current *Journal* with which he occupied the sleepless hours. Never too old to learn, he was assiduous in picking the brains of his younger colleagues in pursuit of the latest advances in medicine. His standards of professional ethics were unswerving and his conduct towards his colleagues was irreproachable; he demanded as much from them. His knowledge and skill were ever at the disposal of his fellow-practitioners, while his gay cheerfulness was a tonic to patients and colleagues alike. To work with Joseph Cohen was a pleasure and a privilege; the force of his example, both as a physician and as a man, made one better fitted to practise the profession which, in his own small community, he so outstandingly adorned. Another colleague writes: "Old Cohen" was an outstanding example of what is really meant by the phrase "the backbone of the profession." He had practised in Aldershot for longer than anyone could remember; he swore that he had forgotten all his medicine, yet at the age of 79 he was as modern and up to date as his youngest colleagues, and worked as hard as any of them in spite of a cerebral vascular warning 10 years before his death Cohen showed the courage of a lion when he palpated his own death-warrant. I was asked to see him, and suggested that he should come that very morning, but he declined with thanks, saying that he had far too many visits to do! He was mercifully spared a long illness and died game and cheerful.

Dr. GEORGE CHRISTOPHER ROBINSON, a well-known Knaresborough medical man, died suddenly on Feb. 5 at Holyhead while on his way to Ireland for a holiday. Born in 1878 in County Fermanagh, Northern Ireland, he studied medicine in Dublin and took the L.R.C.P.&S.I. in 1902. Then for 37 years he practised at Knaresborough and held a number of public appointments. He was police surgeon for many years and medical officer to the Harrogate, Knaresborough, and Wetherby Joint Isolation Hospital. He gave up active work in July, 1939, and moved to Harrogate, but later returned to Knaresborough to carry on the practice of his younger son, Dr. Gerald B. Robinson, absent on war service. His elder son is Dr. Terence G. Robinson, medical superintendent of Shields General Hospital. Dr. G. C. Robinson was a prominent Freemason and in his younger days a noted rugby footballer. He joined the B.M.A. in 1923, was elected vice-chairman of the Harrogate Division in 1929 and chairman in 1930.

Dr. GRACE MARGRETE FREDERICKSON DOVER, of the Christian Women's Medical College, Ludhiana, Punjab, died on Feb. 5 at her mother's home at Telscombe Cliffs, Sussex. She was born in India, at Ghoom, in 1898, daughter of the late Rev. John Frederickson. From Queen's Hill School, Darjeeling, she went on to George Watson's College, Edinburgh, and studied medicine at Edinburgh University, graduating M.B., Ch.B. in 1922. She worked for a year in the ear-nose-and-throat department and in the eye department of the Edinburgh Royal Infirmary, and then became senior house-surgeon at the Royal East Sussex Hospital, Hastings. She returned to India to take up the appointment of lecturer on diseases of the ear, nose, and throat at the Ludhiana Women's Medical College and officer in charge of the ear-nose-and-throat department of the Memorial Hospital, Ludhiana. Dr. Dover received a temporary commission as lieutenant in the I.M.S. in June, 1943, and was later promoted captain.

We regret to announce the death on Feb. 13 at Broadway, Worcestershire, of Dr. CHRISTOPHER WILFRED SHARPLEY, who retired to Cutnall Green, near Droitwich, some little time ago after living at Smethwick, Staffs. He joined the B.M.A. in 1905, represented the West Bromwich Division at the Centenary Meeting in London and at Dublin in 1933, and had been chairman of his Division. A student of the Leeds Medical School he qualified M.R.C.S., L.R.C.P. in 1903, and after serving as

house-physician at the General Infirmary at Leeds became casualty house-surgeon at the Hull Royal Infirmary. During the war of 1914–18 he held the temporary rank of captain, R.A.M.C., and acted as radiologist to the 4th Northern General Hospital, Lincoln, and went over-seas to join the 69th General Hospital. After the war he took the Oxford D.P.H. and became M.O.H. and school medical officer for the borough of Oldbury, Worcestershire, and published a series of annual reports on his work.

Dr. ROBERT GEORGE KEVIN, of Belfast, who died on Feb. 16 after an operation for a serious abdominal condition, graduated in medicine in 1908 and took the M.D. of Queen's University, Belfast, and the D.P.H. in 1911. Before settling in practice he had been house-surgeon at the Royal Victoria Hospital and R.M.O. at Purdysburn Fever Hospital. His wide popularity is reflected in the two tributes that follow. W. D. writes: Dr. R. G. Kevin is mourned by a multitude of patients and friends. He was a man of high intelligence, wide knowledge, supreme kindness and skill, unfailing cheerfulness, and tireless energy. His friends could always be sure of obtaining light from him on any medical problem which puzzled them. He was an enthusiastic and skilful fisherman, and his skill with the shotgun was as great as with the fishing rod. The delight of these excursions with him was not only the sport, but his extraordinary knowledge of birds, beasts, and plants, of castle and dolmen which converted the landscape into a fairyland. He knew the serious ordeal that awaited him, but retained his stout-hearted cheerfulness to the last. G. F. C. writes: By the death of George Kevin Belfast has lost one of its outstanding medical practitioners, one who will long be remembered by all who had the privilege of knowing him. A clinician of the highest order, he combined a sound knowledge of the main branches of medicine with a clear and sympathetic understanding of his patient, thereby making his opinion of the highest value. Endowed with a keen zest for life, whatever he did he did with all his might, be it work, for which he had a remarkable capacity, or play, in many branches of which he excelled—he was a good golfer and a keen sportsman; indeed he was never happier than on those days when he could slip away with rod and gun from the din and bustle of the city to the quiet countryside which he loved so much. Gifted with a sense of humour, he had a well-stocked storehouse of anecdotes drawn from the experiences of his daily life. His genial presence and hearty laugh will be greatly missed by all those with whom he worked at the Board for the medical examination of recruits for His Majesty's Forces. He leaves behind him a record of work well done and a heritage of happy memories. To his widow and sisters sincerest sympathy goes out in their irreparable loss.

The Services

Capt. S. Sankaran, I.A.M.C., has been awarded the M.C. in recognition of gallant and distinguished services in Burma.

The following appointments and mentions have been announced in recognition of gallant and distinguished services while prisoners of war:

M.B.E. (Military Division).—Major (Temp.) W. M. MacLeod, and Capts. T. C. N. Gibbens, W. Milburn, A. P. Norman, J. E. Readman, N. S. Seaford, A. F. Stallard, H. T. Tate, and H. W. Wykes, R.A.M.C.

Mentioned in Dispatches.—Lieut.-Col. F. J. O'Meara, Majors W. L. Kinnear, M.B.E., and G. G. E. Smyth, Majors (Temp.) J. M. Fosbrooke and E. Moore, and Capts. J. A. Learner, D. J. MacRae, J. A. S. Mulligan, and T. M. Park, R.A.M.C.

The following appointments, awards, and mentions have been announced in recognition of gallant and distinguished services in the field:

O.B.E. (Military Division).—Lieut.-Col. (Temp.) E. M. Hennessy, R.A.M.C.

M.B.E. (Military Division).—Major (Acting) H. McP. Kilgour, R.A.M.C. (since died).

M.C.—Capts. A. Crook and A. Gourevitch, R.A.M.C.

Mentioned in Dispatches.—Lieut.-Col. T. A. S. Samuel, M.C., T.D., Major (Temp.) S. W. Barber, M.B.E., and Lieut. S. T. Williamson, R.A.M.C.

The Queen of the Netherlands has conferred on Lieut.-Col. J. R. Lochead, E.D., and Major A. G. Minnes, R.C.A.M.C., the decoration of Officer of the Order of Orange Nassau, and on Capts. N. N. Levine and M. Victor, R.C.A.M.C., the decoration of Knight of the same Order, in recognition of distinguished services in the cause of the Allies.

CASUALTIES IN THE MEDICAL SERVICES

Officially presumed to have lost his life in action at sea on September 13, 1944.—Capt. George Ferguson Allan, M.B., Ch.B., R.A.M.C.

Medical Notes in Parliament

Rickets

Dr. STEPHEN TAYLOR raised, on Feb. 11, the subject of rickets. He said it differed from most human ailments in that medical knowledge of it was practically complete. Its cause was known, as also how to prevent it. The Ministry of Health Survey on Rickets, published in March, 1944, covered the whole country and had been made for the Ministry by the British Paediatric Association. By *x*-ray tests it was found that about 4% of the children under 18 months had or had had rickets. By ordinary direct medical examination the figure was about 12%, varying from 0% in St. Albans to 60% in Sheffield. From the *x*-ray figure the House must conclude that about 24,000 children suffered from rickets each year, though the figure might have changed a little since the issue by the Ministry of Food of whole-cream dried milk with vitamin D added to it. During the war the policy of the Ministry of Food had been to make vitamin D_2 cheap or free. Orange juice containing vitamin C and cod-liver oil containing vitamins A and D_2 had been chosen media, but had not been entirely successful. In a wartime social survey in April, 1944, the Ministry of Food found that among 900 mothers with young children about 70% collected orange juice and only 40% cod-liver oil. Cod-liver oil was relatively unpopular. Its consumption among children over 1 year in age fell off rapidly, while babies were liable to spit it out. Cod-liver oil and malt would not prevent rickets unless it had vitamin D added to it. He urged the Government to test a real alternative in one or two Northern towns—1/10 milligramme of calciferol dissolved in about 15 milligrammes of bland arachis oil. That mixed perfectly and tastelessly with cocoa butter. A small penny bar of chocolate taken once a week would then contain all that was needed to prevent rickets. It might be able to add to the chocolate pro-vitamin A (carotene).

Mr. KEY, replying for the Ministry of Health, said findings differed widely when, during the investigations of 1944, the same group of children were examined by several clinical observers and radiologists. Evidence of mild rickets was found in 2½% of children under 6 months and about 4% of children under 12 months, with a negligible number above that age. There had been no increase of rickets during the war. The Medical Subcommittee of the Ministry's Advisory Committee on Mothers and Young Children made recommendations arising out of the 1944 report. Those recommendations were accepted by the Minister and acted upon. National cod-liver oil with its 700 or 800 units of vitamin D per teaspoonful had received publicity. Vitamin D was being added to national dried milk. There had not been a substantial increase in the uptake of cod-liver oil. Some 25% of mothers with children under the age of 5 were taking their share. Consumption seemed to be smaller in summer than in winter. Investigation showed that palatability was largely due to the way in which cod-liver oil was given to the child. Difficulty in getting the necessary quantities of vitamin A prevented the use of vitaminized chocolate. Infants would not be properly treated if this chocolate was used. Experiment in co-operation with the Ministry of Food was proceeding on the problem.

Social Research

Dr. STEPHEN TAYLOR asked on Feb. 14 if the Government would establish a Social Research Council on similar lines to the Medical Research Council. Mr. HERBERT MORRISON said the committee under the chairmanship of Sir John Clapham which, at the request of Mr. Dalton and himself, was examining the adequacy of the existing provision for research into economic and social questions, had given attention to this point. He preferred to await any observations on it that might be made in their report before reaching any conclusion.

Infectious Disease in Pregnancy

Mr. HERBERT MORRISON announced on Feb. 13 that the Medical Research Council had received reports from Australia suggesting that certain congenital defects in children, including deafness, may be causally connected with infectious disease in the mother during pregnancy. The council was investigating the subject, and the question of the effect on the child's hearing was receiving special attention.

Duty on X-ray Apparatus

Replying for the Board of Trade on Feb. 14 Mr. BELCHER told Col. Stoddart-Scott that there was a shortage of deep *x*-ray therapy apparatus in this country, particularly of certain components. If an application for exemption from duty in a particular case was made to the Board of Trade it would

consider carefully whether it could recommend the Chancellor of the Exchequer to grant the exemption.

Release from the R.A.F.

Answering on Feb. 20 inquiries by Col. Stoddart-Scott and Mr. Garry Allighan Mr. JOHN STRACHEY said medical officers in the R.A.F. in Groups 28 and 29 would be released in March. General duty medical officers in the Army were now being released up to Group 38 and their colleagues in the Naval medical service would be released up to Group 47 by the end of March. Distribution of recruits to the three medical services was still under consideration, but the Air Ministry hoped to receive an allocation which would help to even up the release rate.

Colonial Medical Service in West Africa

Mr. LIPSON asked on Feb. 20 what steps were being taken to recruit and train doctors for the Colonial Medical Service in West Africa and to maintain it at its present level. Mr. GEORGE HALL said applications received from qualified men for appointment to the Colonial Medical Service now nearly equalled the total number of vacancies. Applications continue to come in at a steady rate. He was concerned at the disinclination of many candidates to serve in West Africa. He had under consideration proposals designed to make the service more attractive, particularly to candidates with higher qualifications. For training the fullest use was made of the courses in tropical medicine at the Universities of London, Edinburgh, and Liverpool.

Supply of Medical Textbooks

Mr. PALMER on Feb. 21 asked the Minister of Education if she would take steps to improve the supply of textbooks for medical students. Miss WILKINSON said production of textbooks was in the hands of the publishers, but supplies were affected by shortages of labour and materials. Recent increases in the quota of paper allowed for books and the release of printers under the Class B scheme would result in better supplies becoming available soon. Where shortage of paper held up production the publishers of textbooks had an additional source of supply from the reserve held by the Moberly Committee, who were ready to give sympathetic consideration to applications for important books which the publishers could not produce from their ordinary quota.

D.D.T. in Common Use

Mr. BEVAN on Feb. 21 told Mr. Austin that according to present knowledge there was little risk attaching to the use of D.D.T. in the form in which it was commonly used—namely, as a powder or a watery suspension. Further investigations were proceeding into the toxicity of D.D.T. in oily solution. In any form D.D.T. should be kept away from food, since taken internally it was harmful.

Tuberculosis Treatment in Switzerland

Mr. E. BEVIN announced on Feb. 20 that possible arrangements for the treatment in Switzerland of a certain number of tuberculosis cases were under consideration by the Minister of Health and the Minister of Pensions as a result of a generous offer recently made to the Minister of Health through the Swiss Minister. A proposal to take over in Switzerland two sanatoria owned by the German Government would require careful consideration from many points of view.

Psychiatric Treatment of the Prisoner.—Mr. EDE stated on Feb. 7 that arrangements existed under which any prisoner, man or woman, at any establishment could receive psychiatric treatment if the medical officer considered it desirable. He said that not all sexual offenders were suitable subjects for psychiatric treatment, but all were specially examined with a view to such treatment if the examination showed they were likely to benefit thereby.

Priority Telephone Calls for Doctors.—Mrs. MIDDLETON on Feb. 21 asked the Assistant Postmaster-General to introduce priority telephone calls for the medical profession to obviate delays in securing hospital beds for patients. She recalled that a similar system operated formerly under the National Telephone Company. Mr. BURKE replied that when a member of the medical profession had to make a vitally urgent call the operator would give the call priority if the urgency was explained at the time.

Notes in Brief

Mr. Isaacs told Sir Henry Morris-Jones on Jan. 24 that it was no longer possible to direct women to fill domestic vacancies in hospitals. He hoped that as a result of acceptance by hospital authorities of the new code of conditions relating to hospital domestic workers unemployed women would show increasing willingness to enter this field.

The Government has taken no decision to advance the next census, which is due in 1951.

Mr. Barnes repeated on Jan. 28 a previous refusal to add doctors to the list of priority categories for the purchase of Service reconditioned motor cars.

Universities and Colleges

McGILL UNIVERSITY, MONTREAL

New Department of Anaesthesia

Recently at McGill University there has been created a Department of Anaesthesia, with Dr. Wesley Bourne as its head. The chief objects are: (1) The improvement of the teaching of anaesthesia to the undergraduate student in medicine. (2) The enhancement of opportunities for learning anaesthesia by the internes of the hospitals connected with the university. (3) The maintaining of a three-year diploma course in anaesthesia for those graduates in medicine who desire to become specialists in a complete manner. (4) The development of investigation in anaesthesia, in the way of interrelationship, in the clinic and in the laboratory, and, also, in an interdependent fashion with McGill University's other departments. Dr. Wesley Bourne and his associates feel, with good reason, that the founding of their department celebrates the centenary of anaesthesia in a most practical way.

UNIVERSITY OF LONDON

Prof. Wilson Smith, M.D., has been appointed to the university chair of bacteriology tenable at University College Hospital Medical School. Since 1939 he has been professor of bacteriology in the University of Sheffield.

The degree of D.Sc. has been conferred on N. F. Maclagan, an internal student at Middlesex Hospital Medical School.

LONDON HOSPITAL MEDICAL COLLEGE

The following entrance scholarships for 1946 are announced: *Two open scholarships* (value £100 each), in two or more of the following subjects—human morphology and embryology, physiology and pharmacology, biochemistry, and pathology, bacteriology, and morbid anatomy. The examination will be held on April 16 and 17. *Price Scholarship (Medical)* (value £100), and *Francis Farmer Scholarship (Dental)* (value £50), in biology, chemistry, and physics. The examination will be held on April 17. *Price University Scholarship* (value £100) in anatomy and physiology (limited to students of the Universities of Oxford and Cambridge). The examination will be held on July 5. Applications for admission should be sent to the Dean, Dr. A. E. Clark-Kennedy, London Hospital Medical College, Turner Street, E.1.

The Glanfield Harris Prize in Anaesthetics (value £60) is provided out of interest on a sum of money subscribed by relatives and friends in memory of Dr. John Richard Glanfield Harris, formerly assistant anaesthetist and assistant instructor in anaesthetics to the London Hospital, and will be awarded triennially to the author of the best essay on "Recent Advances in Anaesthesia." Candidates must be students of the London Hospital within ten years of obtaining a registrable medical qualification. No person will be eligible for the prize on more than one occasion. Essays for the prize will be received up to Dec. 31, 1947, and should be addressed to the Dean of the Medical College, from whom further particulars may be obtained.

Medical News

A clinical meeting of the Medical Society of the L.C.C. Service will be held on Wednesday, March 6, at 2.30 p.m., at Bethnal Green Hospital, Cambridge Road, E., when the staffs of Bethnal Green and Hackney Hospitals will demonstrate cases.

The 166th anniversary dinner of the Medical Society of London will be held at Claridge's Hotel on Friday, March 8, at 7 for 7.30 p.m. Applications should be sent to the Registrar of the Society, 11, Chandos Street, W.1.

It is hoped to institute a course of lectures and demonstrations in applied anatomy, physiology, and physics, suitable for medical men intending to take Part I of the Diploma of Physical Medicine, beginning on Monday, March 18. Prospective candidates should communicate with the Dean of the Medical School, Guy's Hospital, S.E.

The Ophthalmological Society of the United Kingdom will hold its annual congress on Thursday and Friday, May 30 and 31, and Saturday, June 1, at the house of the Royal Society of Medicine, 1, Wimpole Street, W. The subject for discussion is ocular disturbances associated with malnutrition. The president's address bears the title "Johannes Evangelista Purkinje." The Bowman Lecture will be given by Dr. Arnold Knapp, on intracapsular extraction of cataract. Part of the Friday afternoon session will be devoted to a joint clinical meeting with the Ophthalmological Section of the R.S.M. Members who intend to take part in the discussion or to read papers should write before the end of March to the honorary secretary, Mr. Frank W. Law, 36, Devonshire Place, W.1.

A meeting of the Association of Industrial Medical Officers will be held on Friday, March 22, at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C. Private business will start at 4.30 p.m. and will be followed by the public business at 6 p.m. Dr. Beards will read a paper on "A System for the Recording of Sickness Absence in Industry with the Object of Determining Occupational Factors of Causation," and Dr. Chard will read a paper on "Practical Treatment of Minor Industrial Injuries." The meeting will be continued from 10 a.m. to 12.30 p.m. on March 23 at the out-patient department of the West London Hospital, Hammersmith, W. Dr. W. S. C. Copeman has arranged a practical demonstration on "Rheumatism in Industry."

The American Ambulance in Great Britain, which is being wound up after very valuable war service, has given £25,000 from its surplus funds to the Middlesex Hospital. The money will be used to endow two single-bed wards, to which members of the staff of the American Embassy and other citizens of the U.S.A. will have first claim. On Feb. 20, in the board room of the hospital, Mr. Gilbert H. Carr handed the cheque to Col. J. J. Astor, chairman of the board of management, who gave thanks for this gift and handed to Mr. Carr a written acknowledgment in which were set out the purposes to which the money will be applied. Others, he said, had already expressed the nation's thanks for the magnificent work of the American Ambulance. Sir Gordon Gordon-Taylor, in a tribute to the work of the American organization in the war, said that when the Royal College of Surgeons was badly damaged by enemy action in 1941, and the Hunterian Museum almost destroyed, the American Ambulance came to their aid with 78 ambulances and removed 26,000 specimens to various parts of the country. The American Ambulance Unit has also presented £5,000 to Guy's Hospital to endow four beds and two cots, and the same sum to St. George's Hospital and to the Westminster Hospital.

The National Collection of Pathological Specimens of War Injuries has been moved and is now housed at Farm Laboratory, the Ridgeway, Mill Hill, London, N.W.7 (telephone, Mill Hill 1182).

Dr. Robert C. Page, a medical officer in the Army Air Forces during the war and assistant medical director of the Standard Oil Company (New Jersey), has been appointed general medical director of the company. He succeeds Dr. Willard J. Denno, chief medical officer since 1918, who developed the medical department from an office with one part-time physician to a world-wide organization having 11 hospitals and more than 150 physicians.

EPIDEMIOLOGICAL NOTES

Discussion of Table

The *Empress of Australia* arrived at Liverpool with one of the crew suffering from smallpox; three other cases had been put ashore at Suez. The infection was believed to have originated in Bombay.

In *England and Wales* the notifications of dysentery were 70 fewer than in the preceding week, while scarlet fever and measles were more prevalent, increases of 54 and 44, respectively, being recorded. The only fluctuation of any size in the returns for scarlet fever was a rise in Lancashire of 48. The increase in measles was mainly contributed by Lancashire and Norfolk (25 and 23 more cases). There were no variations of note in the local trends of diphtheria and whooping-cough.

The fall in dysentery was due to a decrease in the outbreak in Leicestershire, where the notifications fell from 130 to 69; in the preceding six weeks 797 cases were reported in this county. The other large returns were Lancashire 37, London 24, Northamptonshire 22, Northumberland 21, Warwickshire 17, Bedfordshire 10, Worcestershire 10.

In *Scotland* the chief features of the returns were increases of 128 in measles and 32 in diphtheria. The rise in measles was due to the large increase in Glasgow. The recent persistent high level of diphtheria is unsatisfactory, and another intensive drive for immunization of children against diphtheria is to be launched.

In *Eire* the notifications of diphtheria fell by 34, and those of measles by 27. The only notable rise was that of 24 for whooping-cough.

In *Northern Ireland* diphtheria rose from 16 to 24.

Week Ending February 16

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,303, whooping-cough 1,329, diphtheria 489, measles 1,489, acute pneumonia 1,387, cerebrospinal fever 73, acute poliomyelitis 9, dysentery 255, typhoid 5. Deaths from influenza in the large towns numbered 220. Four cases of smallpox, including one imported case, were notified during the week; 2 of the cases were reported from the metropolitan borough of Hampstead, and 2 from Essex, Thurrock R.D.

No. 6

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Feb. 9.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1946 (a)	(b)	(c)	(d)	(e)	1945 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	98	6	24	4	3	94	5	37	4	4
Deaths		3	1				1	2		
Diphtheria	477	27	140	41	24	402	18	117	66	11
Deaths	14	1	2	—	—	5	—	—	1	2
Dysentery	337	24	65	—	—	324	39	104	22	3
Deaths				1	—				—	—
Encephalitis lethargica, acute	4	1	1	—	—	1	—	—	—	—
Deaths		—					—			
Erysipelas			46	8	4			40	6	1
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				27					9	
Deaths	48	5	10	11	1	56	6	8	8	4
Measles*	1,211	237	221	85	1	20,627	814	417	41	131
Deaths	5	—	—	—	—	14	—	6	—	3
Ophthalmia neonatorum	67	5	20	—	—	63	3	15	1	1
Deaths										
Paratyphoid fever	8	—	—	—	—	2	—	—	2(B)	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	1,832	114	107	40	14	1,449	95	18	7	3
Deaths (from influenza)†	304	49	36	13	6	67	13	9	1	1
Pneumonia, primary			528	43				334	28	
Deaths		84		14	16		55		20	19
Polio-encephalitis, acute	—	—				—	—			
Deaths		1					—			
Poliomyelitis, acute	11	—	1	1	—	5	—	2	—	—
Deaths		—					—			
Puerperal fever		1	6		—		2	8		—
Deaths										
Puerperal pyrexia‡	173	16	10	1	1	133	11	12	2	1
Deaths		—					1			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,405	124	178	21	33	1,466	68	180	22	38
Deaths	—	—	—	—	—	2	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	6	—	—	3	1	6	1	1	3	3
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,253	100	69	49	8	1,516	70	136	74	17
Deaths	8	1	1	1	1	14	1	4	4	1
Deaths (0-1 year)	462	63	67	40	5	514	41	70	44	40
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	6,582	1,049	837	274	185	6,565	923	828	320	210
Annual death rate (per 1,000 persons living)			18·4	17·6				18·8	20·6	
Live births	7,382	1,106	874	418	258	7,002	712	819	350	238
Annual rate per 1,000 persons living			17·6	26·8				16·4	22·6	
Stillbirths	231	31	33			218	19	30		
Rate per 1,000 total births (including stillborn)			36					35		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Indiscriminate Use of Sulphapyridine

Q.—*I was amused this morning by a request from a patient for sulphapyridine tablets for his cold. A chemist neighbour told me that a note was handed to him recently for "a bob's worth of sulphapyridine." Am I depriving my patients by adhering rigidly to the teaching that this drug is no good unless given in doses of 20 gr. (1.3 g.) every four hours in streptococcal pneumonia and other conditions caused by this organism?*

A.—The sulphonamides have no effect on the viruses which usually cause the common cold; hence this treatment for an uncomplicated cold is useless. Many of the bacteria which sometimes appear as secondary invaders are susceptible to them, and taking a sulphonamide may therefore prevent the persistence of the catarrh, the development of sinusitis, or even more serious complications which sometimes result from secondary bacterial infection. In patients whose colds habitually pursue such a course sulphonamide treatment may be justified; it is simply a waste of the drug to give it to every case. The small doses usually taken should be adequate for preventing infection, which is the aim of this treatment. Sulphapyridine is scarcely the drug of choice for this purpose, owing to its marked tendency to produce nausea; sulphathiazole, sulphadiazine, or sulphamezathine would be preferable. The fact that all of these have been in short supply is a strong reason for not prescribing them indiscriminately and unnecessarily for trivial ailments.

What is an Epidemic?

Q.—*Almost every time influenza appears some official says there is no epidemic. Shortly afterwards somebody cautiously refers to an "outbreak," and then, when everyone knows an epidemic is on, the word appears in official pronouncements. What is an epidemic?*

A.—Our correspondent's question is as hard to answer as the old question: When does a heap of stones, steadily diminished by taking away one stone at a time, *cease* to be a heap of stones? If in some populous area the monthly average number of notifications of, say, diphtheria were 9 and in a particular month 100 were notified, probably most people would say diphtheria was epidemic there. If 20 cases were notified, perhaps "prevalent" would be the word chosen rather than "epidemic." The word prevalent is to most of us less alarming than the word epidemic, hence an official preference for it. It is interesting to speculate why the word epidemic *is* more alarming. Perhaps we are unconsciously affected by the ancient doctrine that epidemic diseases were due to corruption of the "atmosphere." If that were true the only advice we could give would be to flee into clean air (the advice our forefathers did give). This might not be *much* less futile than official advice now given, but everybody would see its futility.

Exercise Tolerance in Valvular Disease

Q.—*Are exercise tolerance tests useful in assessing chronic valvular lesions?*

A.—Tests of exercise tolerance have not very much value in the assessment of chronic valvular disease. A careful history of the patient's activities and symptoms really provides more satisfactory information. It must be remembered that people with chronic valvular disease may have a perfectly good exercise tolerance; and people may have a bad exercise tolerance for reasons other than those connected with valvular disease. The test must, of course, be suited to the age, weight, and fitness of the patient, and to the severity of the lesion from which he is suffering.

A simple test is to record the patient's heart rate when lying, then note it when standing, and then get him to mount some twenty times or less, as thought suitable, on to a stool about 12 to 18 inches (30 to 45 cm.) high. This exertion should be carried out steadily for about 45 to 60 seconds. The heart rate can then be recorded at the end of the test, and again after one minute. Further observations can be taken at the end of succeeding minutes. In a healthy person the normal reaction would mean the resumption of the original standing rate after about 45 to 60 seconds.

Excitement may introduce a factor tending to provoke acceleration. Effort syndrome may be present, quite apart from valvular disease, and so give a defective result. Probably as important as anything else is observation of the severity and duration of any dyspnoea that may have been produced. With so many variable factors, it is obvious that the test must be considered in the light of other findings. It has, however, a definite place where information of an objective character is desired as to the effect of physical exertion upon the heart. Most textbooks have information on the subject.

Pasteurization and Surgical Tuberculosis

Q.—*Are there any statistics available which prove that pasteurization of milk results in a fall in incidence of surgical tuberculosis? If so, what are the relevant facts?*

A.—Statistics which prove that pasteurization has decreased the incidence of surgical tuberculosis are not available. Deaths from tuberculosis, except for the country as a whole, are tabulated under two headings only—"respiratory tuberculosis" and "all other forms." The trend of the mortality from surgical tuberculosis must, therefore, be indirectly estimated from "all other forms." This indirect approach was made by Prof. G. S. Wilson in his book *The Pasteurization of Milk* (Arnold, London). He compared the experience of London, where almost 100% of the milk is pasteurized, and that of the rural districts, where most of the milk consumed is raw. While not proving in a strictly scientific sense that pasteurization has decreased the incidence of bovine tuberculosis, the evidence produced supports this contention.

Internal Combustion and Vitamin B

Q.—*I read in the "New Statesman and Nation" that recent discoveries in the vitamin B group show that they "quicken the processes of internal combustion, so that the desirable loss of heat takes place easily and a man can remain energetic and mentally alert without succumbing to the lassitude which a hot climate usually imposes." How much of the above statement is true?*

A.—As so often happens, the superficial analogy of the human body with an internal combustion engine, implied in the question, is very misleading. There seems to be some confusion between "loss of heat" and the stepwise release of energy, due to a chain of enzyme reactions, that results finally in the complete combustion of carbohydrate (glucose) to carbon dioxide and water. Several of these reactions are catalysed by enzymes, of which certain water-soluble vitamins form an integral part; these are aneurine (thiamin, vitamin B_1), riboflavin, and nicotinic acid (or its amide). It is doubtful whether there have been any serious scientific publications showing that these processes, provided they are proceeding normally in a healthy body receiving an adequate diet, can be at all influenced in such a manner as to affect the heat-regulating mechanism of the body.

Difficult Child

Q.—*While I was away from home my daughter, aged 3½, fretted for me, would ask after me at meal-times, and be sick. I have now returned home, but the trouble continues. She still creates a scene at meal-times, saying first that she has cramp, then that she is hungry and wants feeding, and then she is sick. After that she generally eats well. She declares that it is her naughty dollies who are sick, and who make her miserable. What is the right treatment?*

A.—Feeding difficulties are very common between 3 and 4 years of age, and usually clear up spontaneously unless too much notice is taken of them. In this case the onset of symptoms while she was missing the parent, and her insistence on projecting her "naughtiness" on to the dollies, suggest that she is suffering from anxiety so acute that she cannot control her behaviour. It would probably be wise to let her be seen by a children's psychiatrist, but if there is a good day nursery or nursery school in the neighbourhood it might help her to attend this. Feeding difficulties often cease when children have meals in a group, and the nursery should be able to provide additional outlets in play and other occupations that would benefit her considerably.

Altered Blood from the Nipples

Q.—*A woman of 50 has noticed for some months that on squeezing the nipples a small droplet of an inky-black fluid can be expressed. There is no pain, and the breasts and the nipples look quite healthy. What are the cause of this, and the treatment?*

A.—The discharge from the nipple in this case is almost certainly old changed blood arising from small papillomata in the larger subareolar collecting ducts. If the sector of the breast radiating from the particular point at which the discharge appears is palpated, it will probably be found that pressure will produce more discharge. Some of these papillomata in the course of time may undergo malignant change into duct carcinomata, but others have been

followed for many years without any sign of such change. It is sometimes advocated that the small sector of the breast concerned should be excised, but this may be followed by a repetition of the discharge from other sectors. On the whole it is probably wisest to do nothing active at this age, although the breast must, of course, be kept under active observation. The writer has not seen much improvement following *x*-ray treatment in these cases, and mastectomy (in this case bilateral), which has been suggested, would appear rather too drastic a treatment for a condition which is, after all, only potentially malignant.

Seborrhoeic Dermatitis in a Child

Q.—*What is the best treatment for seborrhoeic dermatitis in a child of 1 year? Is the diet of any importance? If sulphur is used is there a risk of producing a sulphur dermatitis?*

A.—External treatment by sulphur requires experience and judgment, and is perhaps best avoided except in conditions such as acne and rosacea where the seborrhoeic basis requires it. This applies to all forms of infantile eczema, because, although it is sometimes effective in the seborrhoeic variety, the chance of aggravation is not inconsiderable. Probably a mild boric and zinc ointment with 2% ichthammol would prove a safer application.

Diet in infantile eczema is a controversial subject, and while skin-tests often prove positive to such things as egg-white and milk, their exclusion usually makes no difference to the eruption. The fat over-nourished child probably benefits from restrictions, but at the present time special diets are either difficult or impossible, and might even interfere with the development of a growing child.

Abortion

Q.—*A woman aged 30 had an abortion (2 months) in 1943. In December, 1945, she gave birth to a five-months foetus. From her history the pregnancy should have been seven months, but the foetus was in good condition and did not look as if it had been dead for two months. A week before labour she had a slight haemorrhage, and just after it a rather more pronounced one. Can you tell me: (1) the most probable cause or causes; (2) the chances of a future normal pregnancy; (3) the best immediate post-natal treatment; and (4) if she attempts a future pregnancy what precautions should be taken? She has a slight degree of anaemia and is rather nervous; otherwise normal.*

A.—(1) The fact that the foetus was small for its age rather suggests some interference with its nutrition and possibly an underlying fault in the placenta. It would be interesting to know whether the latter showed signs of infarction or other abnormality. Steps should be taken to exclude vasculo-renal disease—of which even a slight degree may be significant—and any general illness which might impair foetal nutrition. The anaemia may be important, and its nature and degree should be determined. The mention of nervousness raises the possibility of thyrotoxicosis as a causal factor in the abortions. Local disorders should also be looked for, and if bimanual examination gives negative results uterosalpingography could be carried out, to exclude deformities such as a septate uterus. If no cause can be found it should be remembered that the occurrence of two abortions is not necessarily indicative of an abortion habit; they may each have been caused by random factors not likely to recur.

(2) The chances for the future depend largely on the cause of the abortions, if one can be found. For all cases of two consecutive abortions, however, and irrespective of treatment, it has been calculated mathematically that the chances of the third pregnancy progressing to term are 30 to 60% (for full discussion see P. Malpas, *J. Obstet. Gynaec. Brit. Emp.*, 1942, **49**, 65). If a cause can be found and treated the chances are, of course, much higher.

(3) There seems no need for immediate treatment other than for the anaemia and any other condition which investigation brings to light.

(4) Advise the patient to wait six months from the time of the last abortion before attempting to conceive again. In the next pregnancy, if no cause for the abortions has been found, treatment should be on the usual empirical lines: rest, avoidance of coitus and travelling, sedatives for general nervousness, and possibly twice-weekly injections of 5 mg. progesterone up to the twenty-eighth week of pregnancy. Attention should be paid to ensuring the patient an adequate diet; supplements of iron and large doses of vitamin E might be helpful.

Menopausal Neuralgia or Rhinitis

Q.—*About 30 years ago a lady had severe influenza followed by frontal sinusitis, which was treated surgically. Recently she has had neuralgic attacks in the distribution of the right fifth nerve; the eye waters and becomes slightly congested. A.P.C. tablets do good temporarily, and I have used the ordinary type of nasal spray, keeping the mouth open during this procedure. Would a course of sulphonamides or penicillin be useful?*

A.—Before advising treatment an attempt at a more accurate diagnosis should be made. The symptoms given in this question correspond more closely with trigeminal neuralgia or menopausal vasomotor rhinitis than with frontal sinusitis. If there are no facilities for diagnosis other than observing the effects of treatment, ephedrine 1/2 gr. (32 mg.) and phenobarbitone 1/2 gr. (32 mg.), twice daily, with an adequate dose of stilboestrol, are effective in controlling the symptoms of vasomotor rhinitis. Neither penicillin nor sulphonamides are indicated without more adequate investigation of the cause of the pain.

INCOME TAX

Assistant Installed in Own Residence

B. C. has hitherto been allowed to deduct only one-half of the expenditure on house rent, rates, heating and lighting, and cost of maid. He has now installed a full-time assistant in the house and has left the district.

*** The whole of these expenses are claimable as from the date when B. C. ceased to use the premises as a private residence. The benefit which the assistant receives by residing on the premises provided at B. C.'s expense is not part of the taxable income of the assistant.

Use of Car

H. J. is in full-time employment, and receives £45 per annum plus 3½d. per mile for the use of his car. He proposes to sell the car for, say, £350, and buy another for, say, £500. What relief, if any, can he claim against his income-tax assessment?

*** In ordinary circumstances the Revenue authorities would not entertain such a claim, holding that the cash received would, over a period of years, cover the "necessary" cost of travelling in the performance of the duties. It is possible that representations that in existing conditions the cost of replacement is quite abnormal and therefore has not been recouped might succeed to the extent of securing deduction of some part of the £150 to be expended in replacement.

M. N. has a "full-time Government appointment," but is allowed to do a little private practice in his spare time. He keeps a car but receives no allowance for its use in connexion with his appointment. What can he claim for its use against his earnings from private practice?

*** A proportion of the total running costs, including depreciation, insurance, etc. The proportion will presumably be determined by the ratio of the total mileage to the mileage specifically due to the private practice. If the result of the private work is that a loss is incurred, the amount can be set against the Government salary, etc., under Section 34 of the Income Tax Act, 1918.

Temporary Residence in the United Kingdom

E. J. holds a Colonial appointment and has been granted twelve months' special leave for a specified form of training. He will continue to pay the Colonial tax. He landed in this country on Oct. 31, 1945. What is his liability, if any, to British income tax?

*** E. J. has clearly come to this country for a temporary purpose only and without the intention of establishing a residence here. Accordingly he will not be liable to British tax in respect of his Colonial income unless he spends six months in this country in any one financial year. As he did not arrive until Oct. 31, 1945, he will not be liable for the year to April 5, 1946; and he will not be liable for the year to April 5, 1947, unless he spends six months in this country in that year.

"GAMMA" is in the Colonial Medical Service and has been granted three years' study-leave in this country.

*** He will apparently become "resident" but not "ordinarily resident" and will be liable to British tax. He will, however, be entitled to "double income tax" relief, and to the usual allowances—i.e., £180 for a married man and £50 for each child, and 10% in respect of earned income. Fees paid for medical courses and examinations will not be deductible.

Deduction of Tax from Assistant

R. R. explains that a former assistant of his acted as his locumtenent while on Army leave. He has asked the local inspector of taxes what tax he should deduct but has had no reply.

*** As the former assistant is not normally carrying on his profession as a locumtenent it seems to be both right and desirable that he should be treated as an employee and suffer tax by deduction. The amount to be deducted is the sum shown against the appropriate amount of "gross pay" on the pink "emergency card." If R. R. has not been supplied by the tax office with such a card, no doubt he will receive one on a request being made.

LETTERS, NOTES, ETC.

Longevity

Dr. HUGH MACKINTOSH (Troon) writes: Your correspondents appear to have overlooked two rather important indicators concerning longevity. First, human remains have been disinterred by archaeologists, almost certainly pre-Flood, having characteristics that indicate longevity far greater than anything we can at present conceive. The most striking indication is the extraordinary way in which the teeth are worn right down into their sockets by long usage. Thus "the ancient cemetery at Ur (i.e., Abraham's Ur of the Chaldees), and the still more ancient one (*circa* 2,000 years older) at the neighbouring site called Al-Ubaid, testify strongly not only against revolutionary theories but also to the accuracy of the Bible in ascribing long life-periods to primeval mankind." And Sir Arthur Keith states: "Certainly, as physical anthropologists measure people, the *later* people of Ur *were not the equal* of the earlier people found at Al-Ubaid"; and again: "The ancient Sumerians were a large-headed, large-brained people, approaching or exceeding in these respects the longer-headed races of Europe. . . . The teeth of the early Sumerians of the Al-Ubaid cemetery were worn down to an extraordinary degree—much more than those of the people buried in the later cemetery of Ur itself." Actually there is ample secular evidence to show that there once existed on this earth of ours a race of men of magnificent physique, splendidly muscled, with a brain capacity exceeding that of modern man, and having all the signs of extreme longevity. My second point is that in trying to estimate the claims of the Bible for great length of years your correspondents are assuming that climatic conditions on the earth have always been as they are now, whereas there is much evidence that that is not so. In his book *Evolutionary Geology* McCreadie Price shows that the geological evidence supports the view that at one time the earth enjoyed a uniformly warm climate from pole to pole ideally suited for the growth and long life of plants and animals. The plants and animals that existed then and whose species have survived to the present day were giants of their kind. He also shows that a catastrophe of world-wide character occurred that could only be explained by the Flood of the Bible. There is only one thing that can be visualized as giving a uniformly warm and equable climate—namely, something that would envelop the whole earth so as to prevent the direct rays of the sun from penetrating its surface and at the same time act as a heat-trap. The only thing that can be imagined as doing this is a complete envelope of water vapour high up in the atmosphere or at its upper limit. Under such conditions the climate would be uniformly warm, with no extremes of any kind, and there would be no showers but a heavy dew to water the surface of the earth. Nor would the seasons exist as they do now, nor the clear distinction between day and night that a direct view of the sun, moon, and stars gives. If, by some chance cause, this belt or envelope of water vapour were to be precipitated on to the earth, the result would be a flood of the extent described in the Bible, with all those extremes of heat and cold, moisture and drought, that we now experience due to the action of the direct rays of the sun. So it would seem that conditions for animal and plant growth and survival were once much more ideal than they are now, and that we cannot judge the possibility of the extreme longevity claimed in the Bible on the assumption that climatic conditions were the same then as they are now.

Jittery Legs

A. R. writes: The following two personal cases suggest that this symptom, which was discussed in the annotation (Jan. 19, p. 95), has a sexual basis. (1) For some years I was troubled with pruritus. If the scrotal skin around the root of the penis was traumatized—e.g., by too rough drying after a bath or by scratching—I invariably had symptoms in bed shortly after. Trauma to the under surface of the scrotum or to the perineum had no such sequel. The symptoms were similar to those you describe, and consisted of an ill-localized discomfort, apparently in the muscles of the calf, relieved for some 5 to 10 seconds by movement of the legs, then building up again and demanding another movement for its relief. This happened only in bed. Until I discovered a means of speedy relief the symptoms would persist for some half to one hour on each occasion. I found that a local anaesthetic applied to the traumatized area usually gave prompt and complete relief. Occasionally, if the trauma had been more severe, relief was only partial. (2) During the first years of our marriage my wife sometimes had similar symptoms when lying close to me in bed. These were relieved either by coitus or by moving further apart.

"General Debility"

Dr. H. CRICHTON-MILLER (Harrow-on-the-Hill) writes: On p. 303 of the *Journal* of Feb. 23 a question is asked in the following terms: "How can so-called general debility in the ordinary working-class patient be tackled so as to get the quickest recovery?" Without commenting on the positive advice offered, may I enter a protest at what is omitted? I refer to the complete absence of any reference to bacteriogenic conditions. Not a word is said about septic tonsils or intestinal stasis; no mention is made of infected sinuses or dental toxaemia. And yet these must account for a goodly proportion of cases. May I suggest that before prescribing a "large amount" of rest or exhibiting an equally "large amount of appreciation" the practitioner would do well to investigate the E.S.R.?

Descent of the Testis

Dr. H. MACNAUGHTON-JONES (Amersham) writes: There is a simple explanation which may account for the descent of the testicle and which does not appear to have been mentioned. The season in which birth took place was a material consideration in non-migratory animals, including man during his development and in primitive states before the adoption of clothes. Though the increased survival of the young born at a particular period would, apparently, be sufficient to secure parturition during it, in animals in which there was a material interval between copulation and parturition the exposure of the testicle to climatic changes would be a valuable factor in determining the presence of minimum and maximum appetence in the male at the appropriate times. Indirectly and to a minor extent it would affect the period of appetence in the female, inasmuch as those in which its presence coincided with that in males would be those most frequently bearing young, and during development would lead to correlation.

Hypodermic Needle for Skin Suture

L./S.B.A. KILLE (Glenholt Camp, Plymouth) writes: The other day an incised wound of the wrist was sutured in a way I had never seen before. All the S.B.C.P.O. used was a hypodermic needle and horse-hair suture, prepared with the usual aseptic precautions. The suture was passed through the bore of the needle till the end was visible but clear of the needle point. With his free hand he brought together the wound edges, and with a smooth sweep passed the needle through the flesh on either side of the wound; the patient was unaware that he had been touched with a needle. The suture was passed on through the bore and the end gripped with the free hand; the needle was then withdrawn along the length of the suture, and the suture was tied. Four sutures were inserted in this way without any discomfort to the patient, and the operation was as neat as any I have ever seen.

Toxic Effects of High Octane Petrol

Major JOHN H. LANKESTER, R.A.M.C., writes from Oxted: With reference to the question and answer under this heading (*Journal*, Jan. 26, p. 152) and to Mrs. Jean Patey's note (Feb. 16, p. 264) some of the patient's symptoms may well be caused by the tetra-ethyl lead which is added to high octane petrol. Intoxication by the tetra-ethyl lead contained in 100-octane petrol was common among Indian Pioneers engaged in filling petrol cans in Abadan in 1943–4. Three or four deaths occurred before adequate preventive measures could be adopted. Absorption of this form of lead is largely by inhalation, and is accelerated by high temperature. The severe cases with mental symptoms were during the excessively hot summer months. Early symptoms include headache, giddiness, epigastric discomfort, and muscular weakness. Later, and often with dramatic suddenness, mental symptoms supervened in the form of violent mania with acute terror. Such cases were usually fatal. Preventive measures adopted were: improved ventilation at working site, reduction of spilling, the use of a barrier cream on the hands, and the strict enforcement of a roster of duty which gave operators other duties away from exposure to petrol in order to allow excretion to take place. Special precautions are also necessary in the handling of the pure tetra-ethyl lead. An authoritative article by the medical staff of the oil company concerned would be of interest.

Service Conditions and the Ethical Code

The writer of the letter with this heading published on Jan. 12, 1946 (p. 76) under the pseudonym "Hippocrates" informs us that the dental surgeon in question was not an officer of the Army Dental Corps.

Medical Golf

The Medical Golfing Society marked its renewal of activities by a dinner at the Trocadero, in conjunction with its annual general meeting. Sir Charles Gordon-Watson was in the chair. Some 40 members were present, and all enjoyed a good dinner and a very cheery evening. It is hoped to hold a one-day meeting at Walton Heath, and in the late autumn a week-end meeting at the sea.

New Year Honours

Acting Squad. Ldr. Frank Desmond MacCarthy, R.A.F.V.R., was appointed O.B.E. (Military Division) in the Honours List published on Jan. 1.